

FIG. 1

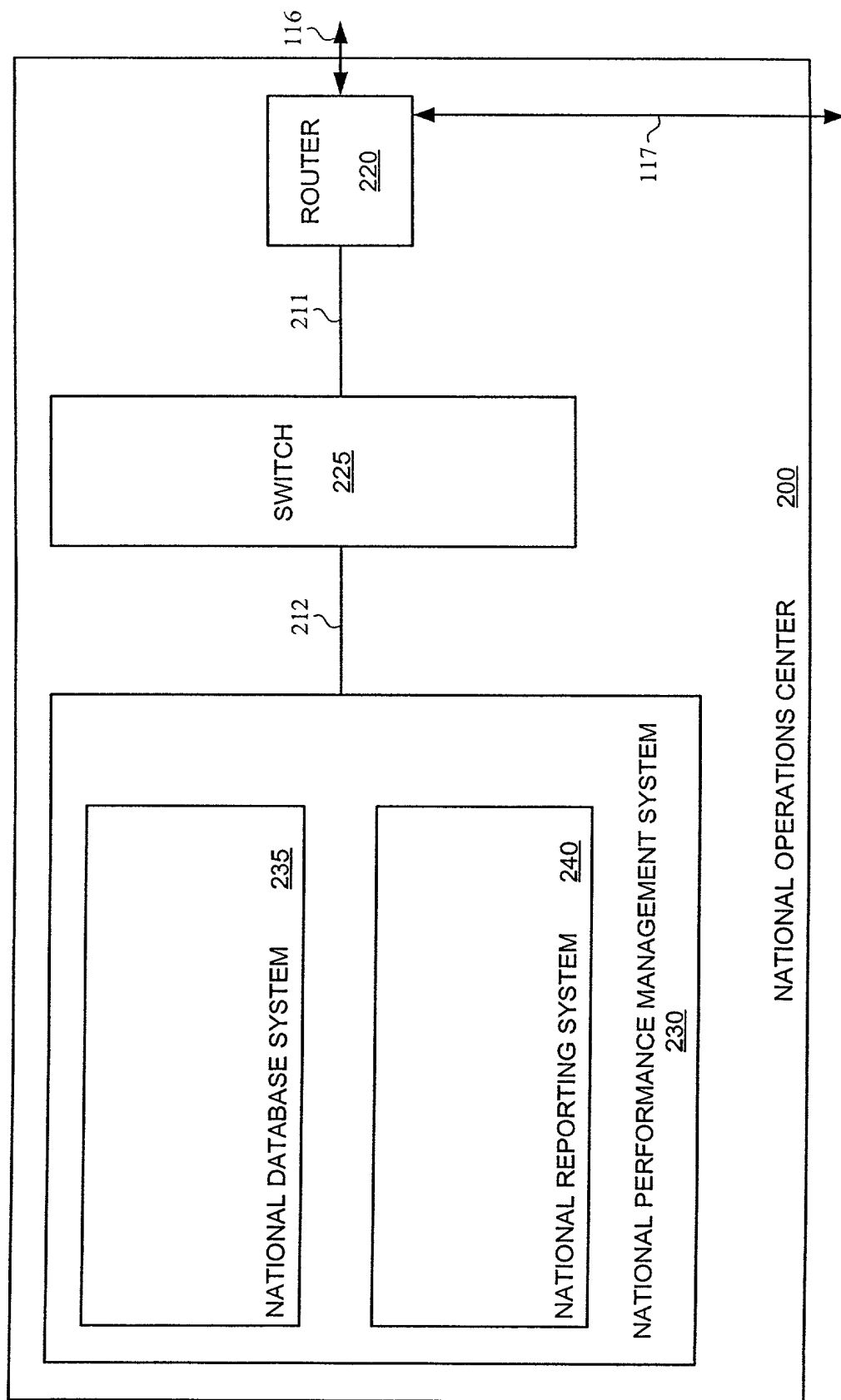


FIG. 2

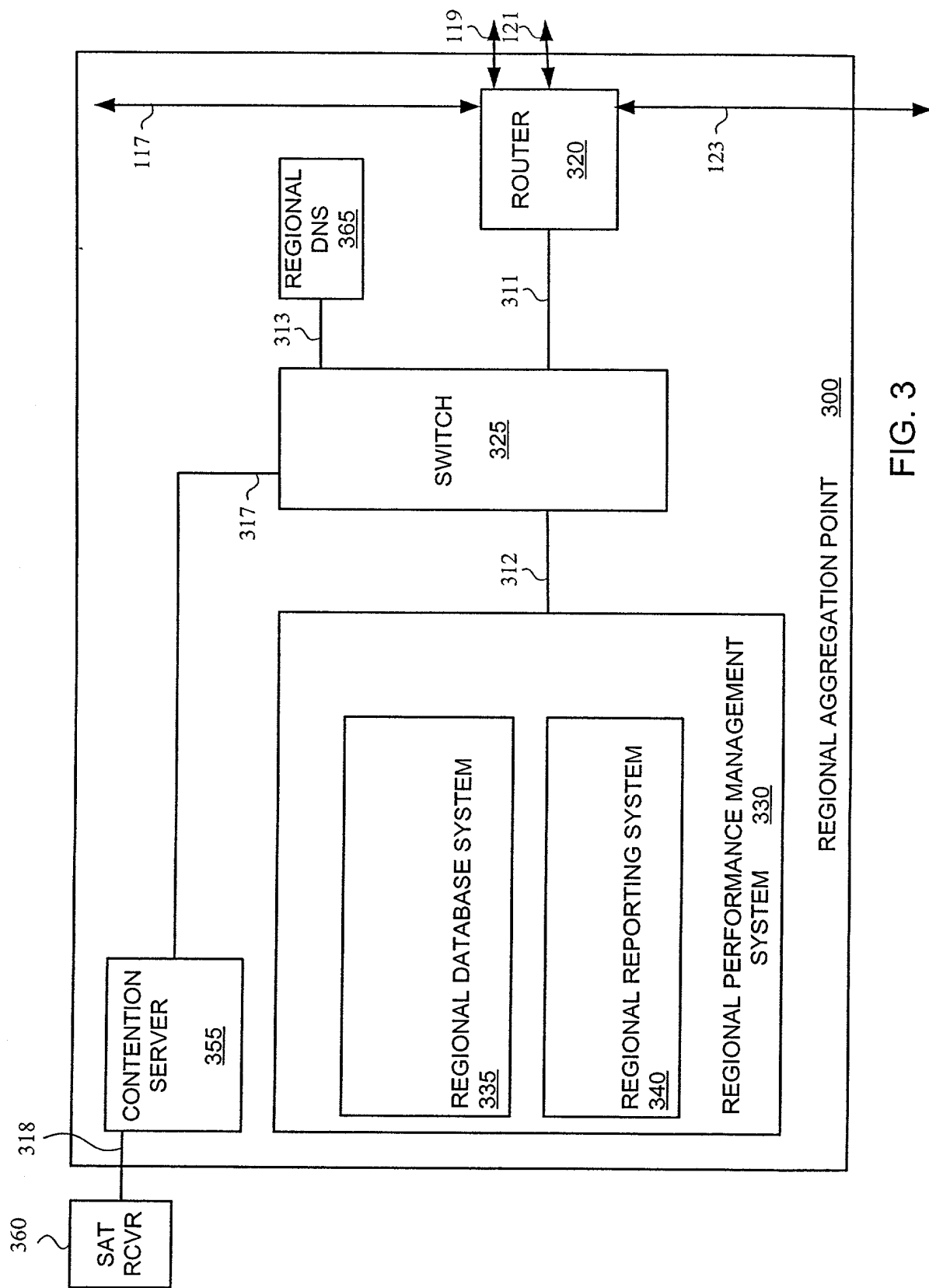


FIG. 3

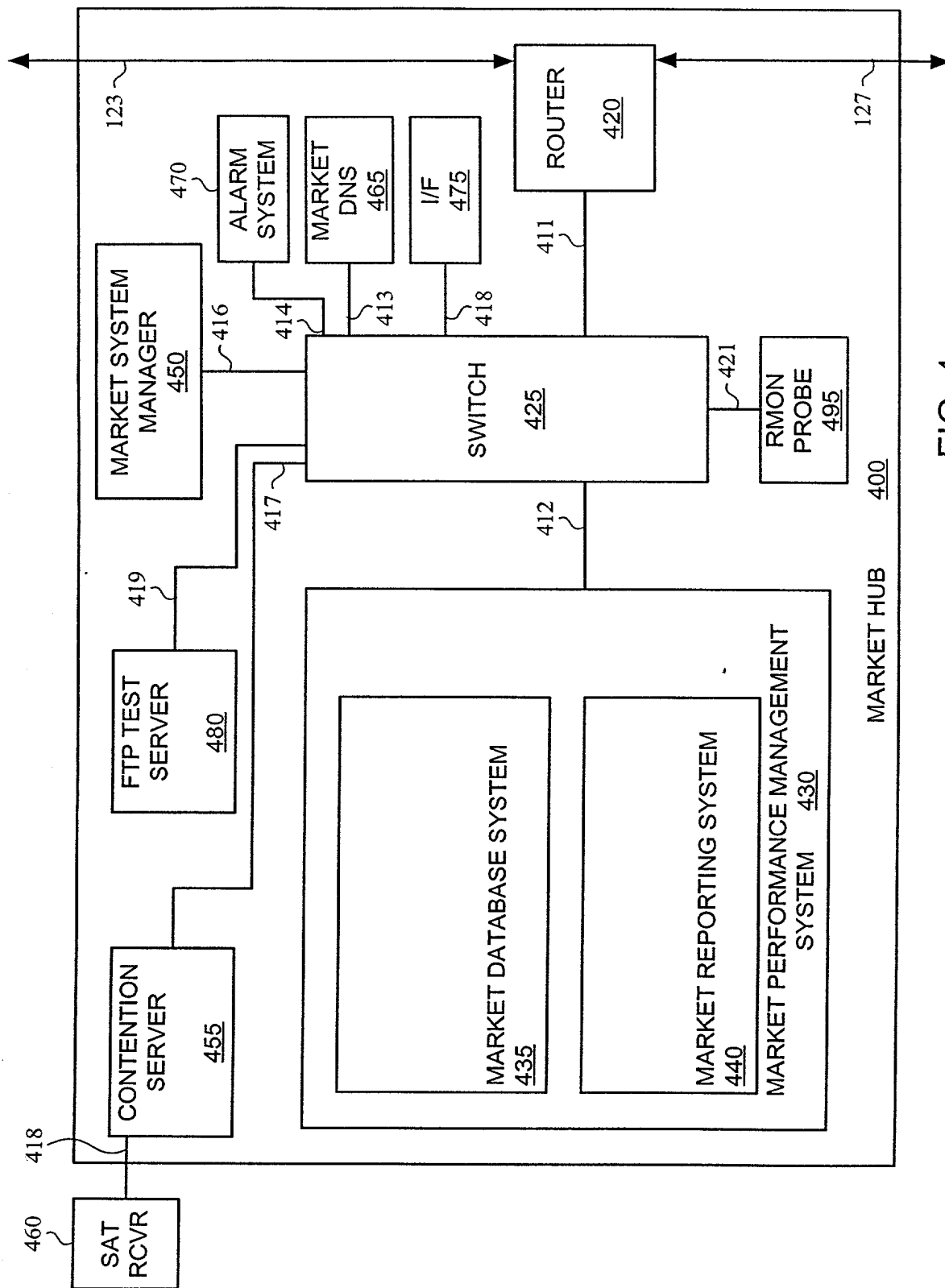
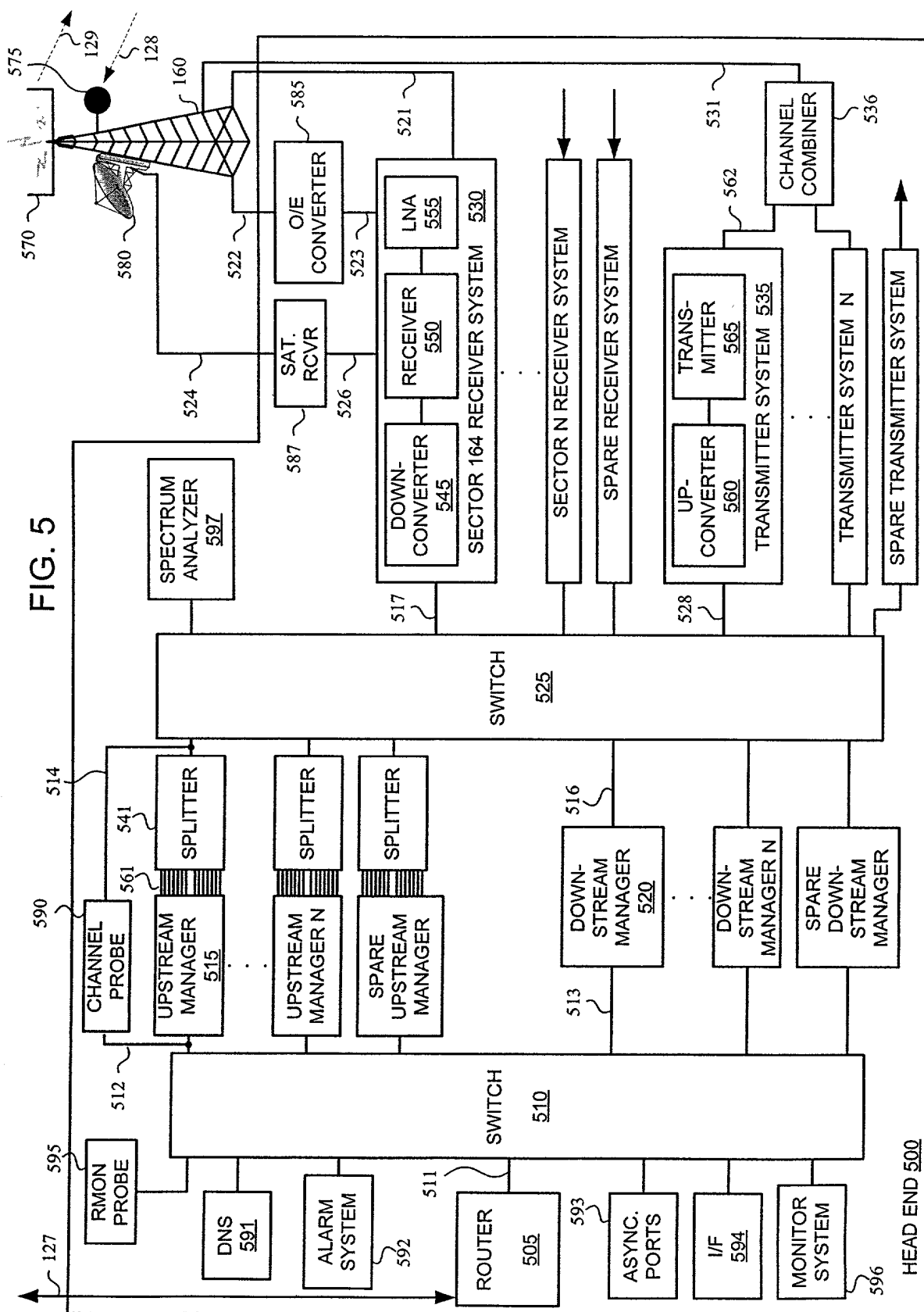


FIG. 5

The diagram illustrates a radio network system architecture. At the top, a **CHANNEL PROBE 561** and an **UPSTREAM MANAGER 515** are connected to a **SPLITTER 541**. Below them are **UPSTREAM MANAGER N** and **SPARE UPSTREAM MANAGER**, each with its own **SPLITTER**. These are connected to a **SWITCH 510**. To the left of the switch are a **RMON PROBE 512**, a **DNS 591**, an **ALARM SYSTEM 592**, and a **ROUTER 505**. The router is connected to **ASYNC. PORTS 593**, an **I/F 594**, and a **MONITOR SYSTEM 596**. The switch 510 is also connected to a **SWITCH 525**. Between the two switches are **DOWN-STREAM MANAGER 520**, **DOWN-STREAM MANAGER N**, and **SPARE DOWN-STREAM MANAGER**. The switch 525 is connected to a **SPECTRUM ANALYZER 597** and a **SAT. RCVR 587**. The receiver system (530) includes a **DOWN-CONVERTER 545**, **RECEIVER 550**, **LNA 555**, and **O/E CONVERTER 585**. The transmitter system (535) includes an **UP-CONVERTER 560** and **TRANSMITTER 565**. A **CHANNEL COMBINER 536** is at the output. Antennas 127, 128, and 129 are shown at the top, connected to the system via lines 570 and 580.



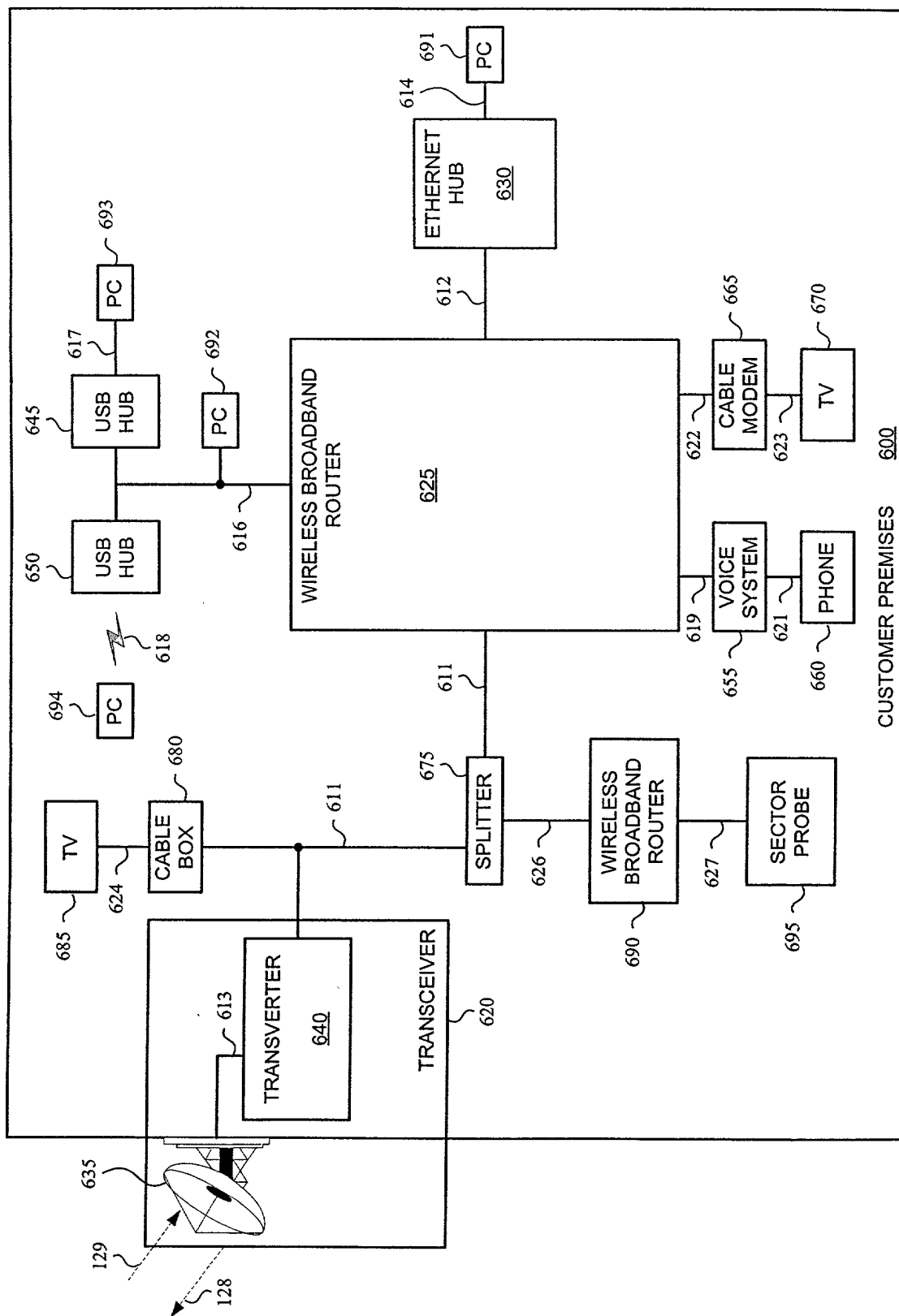


FIG. 6

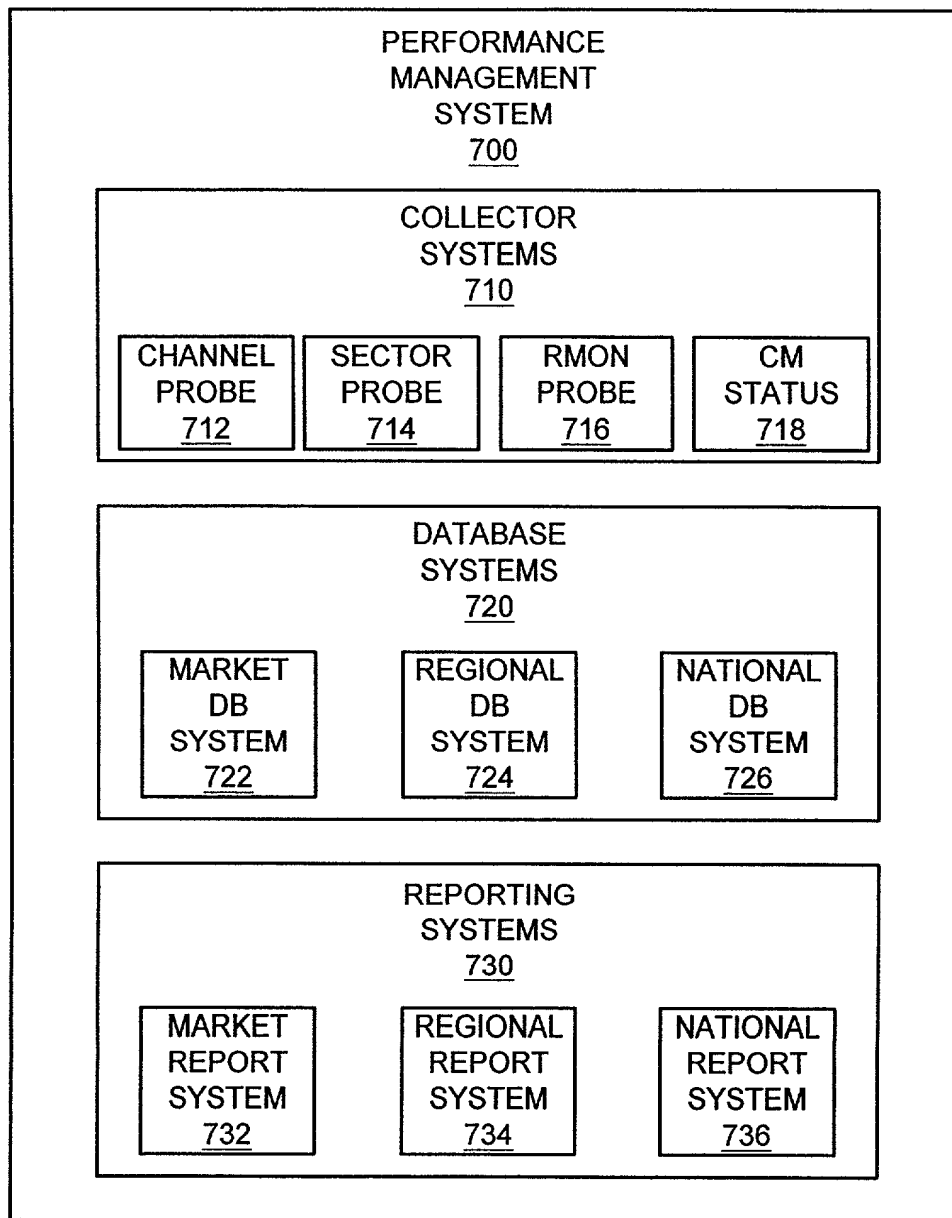


FIG. 7

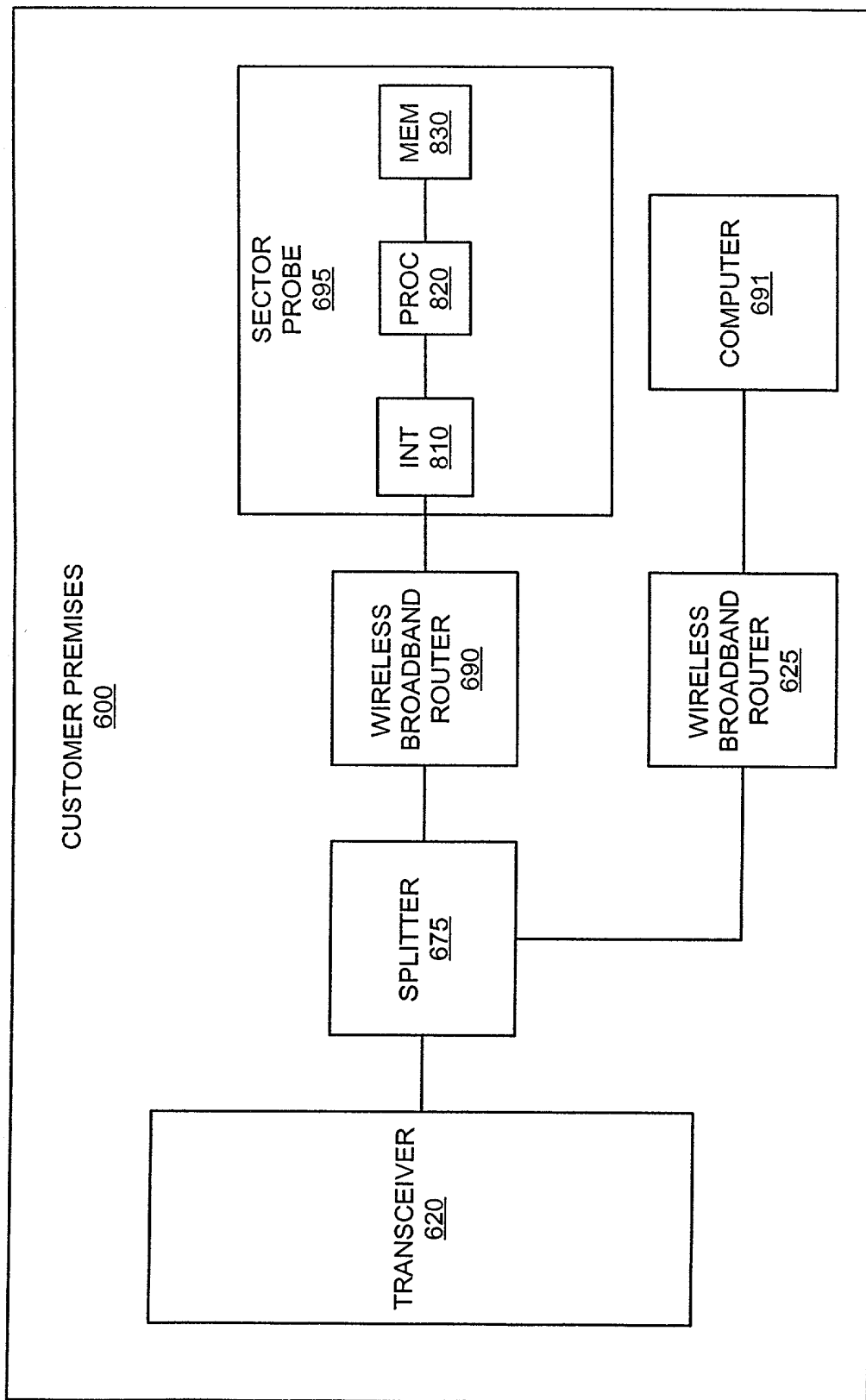


FIG. 8

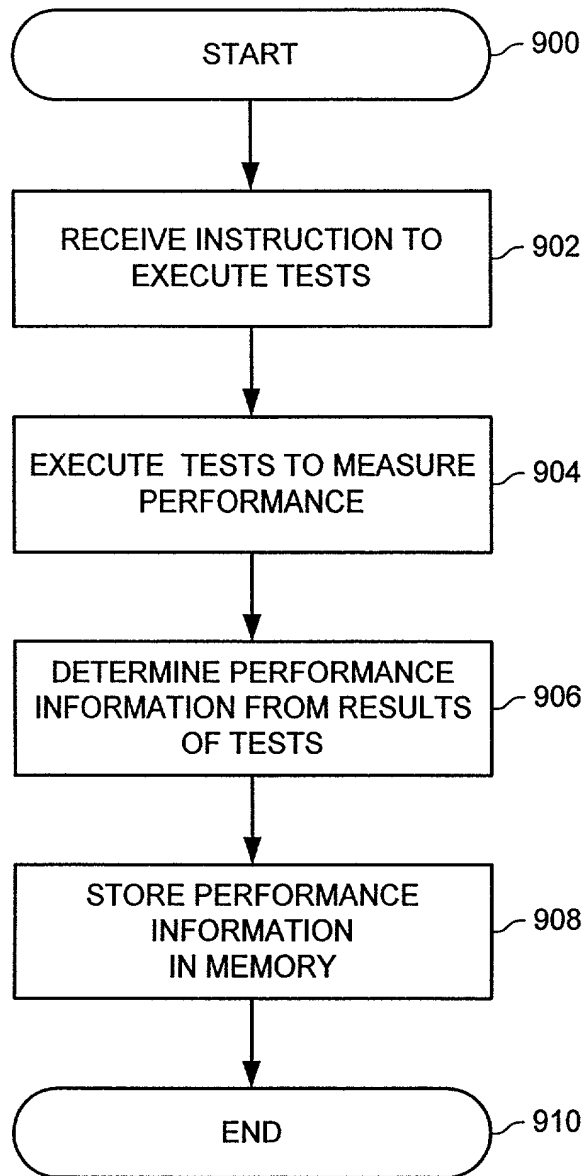


FIG. 9

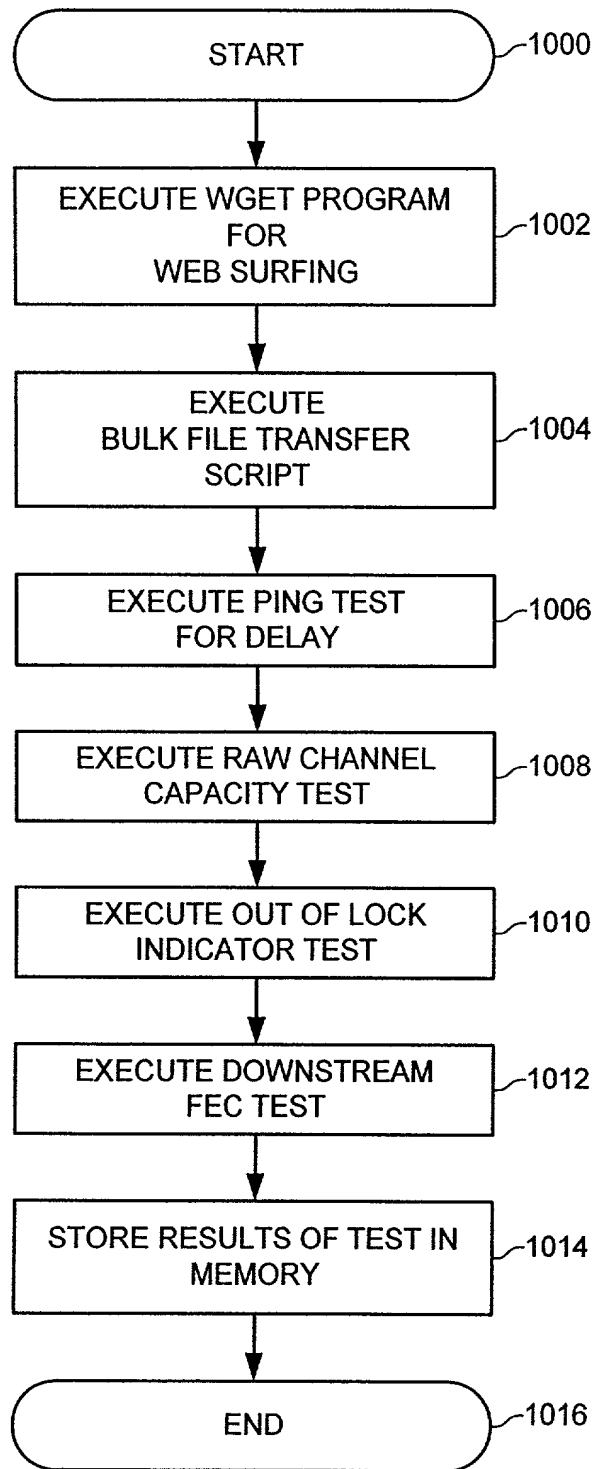


FIG. 10

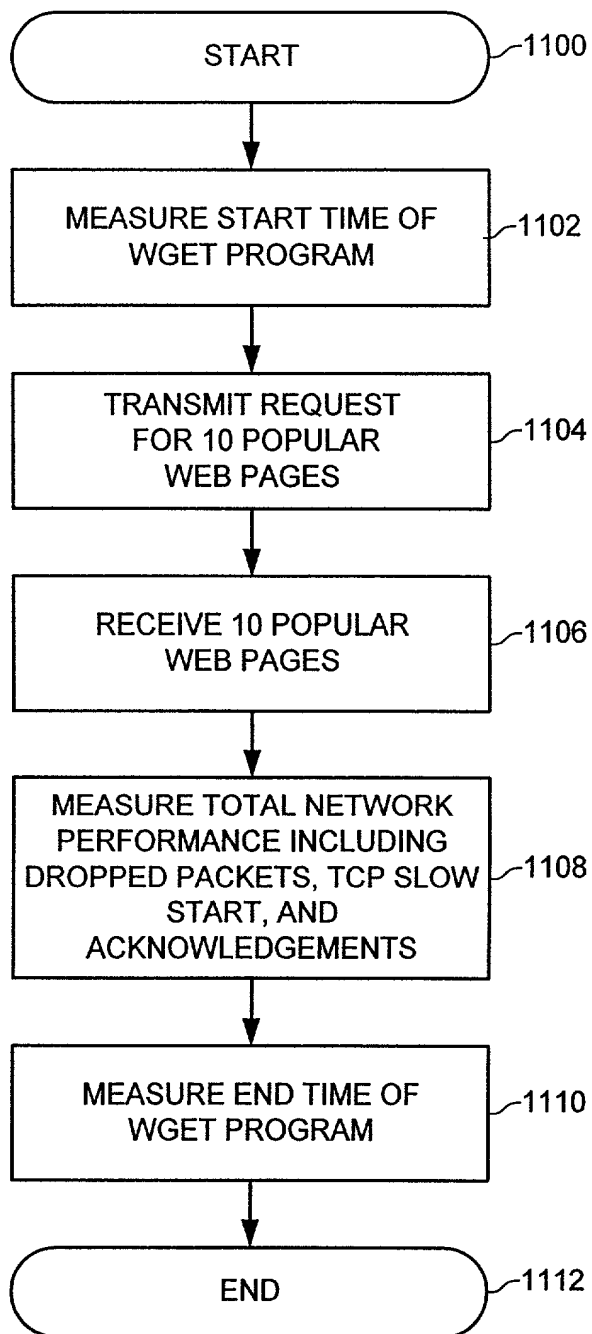


FIG. 11

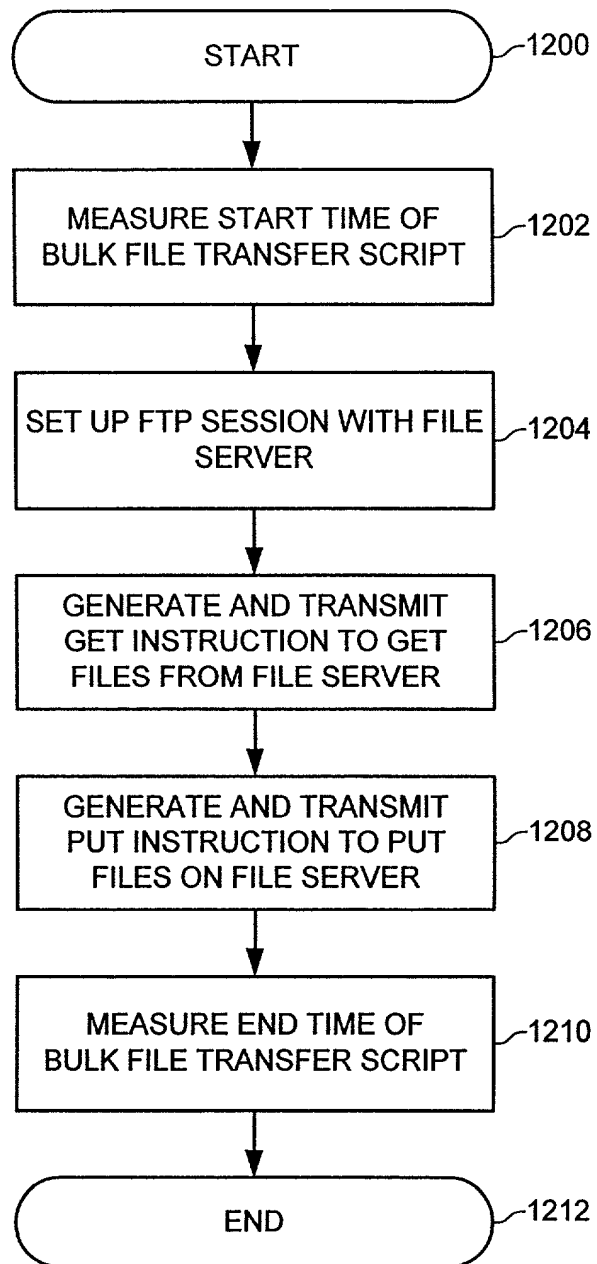


FIG. 12

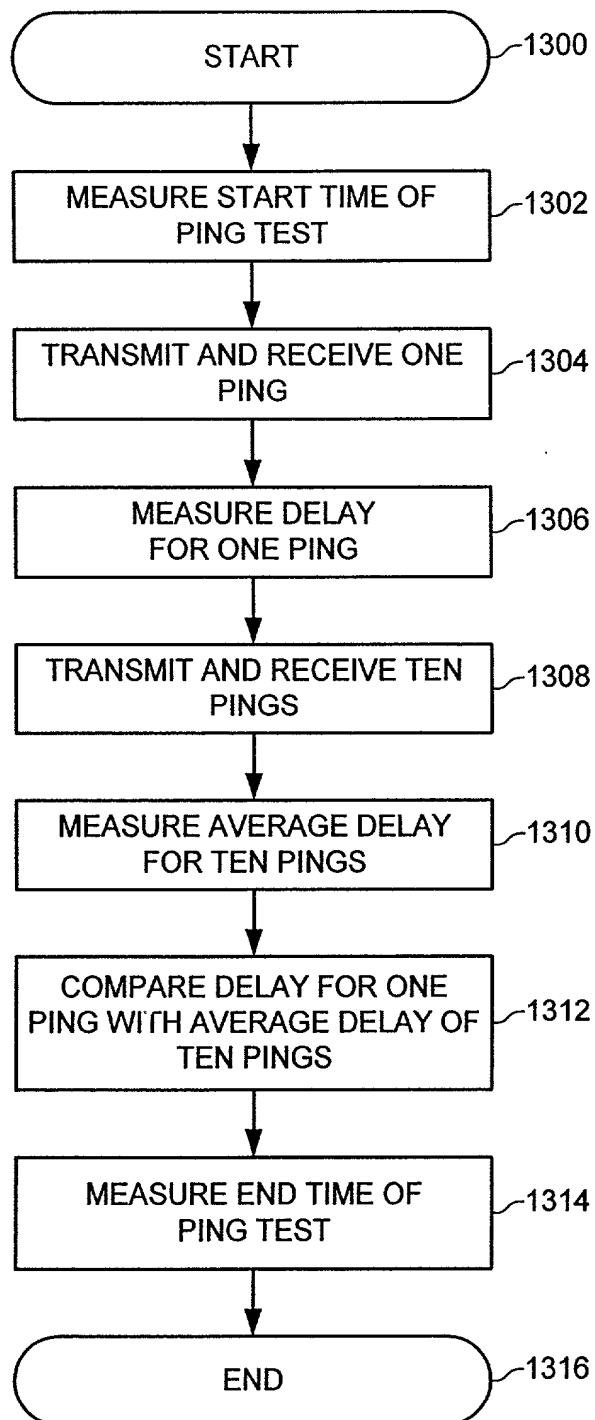


FIG. 13

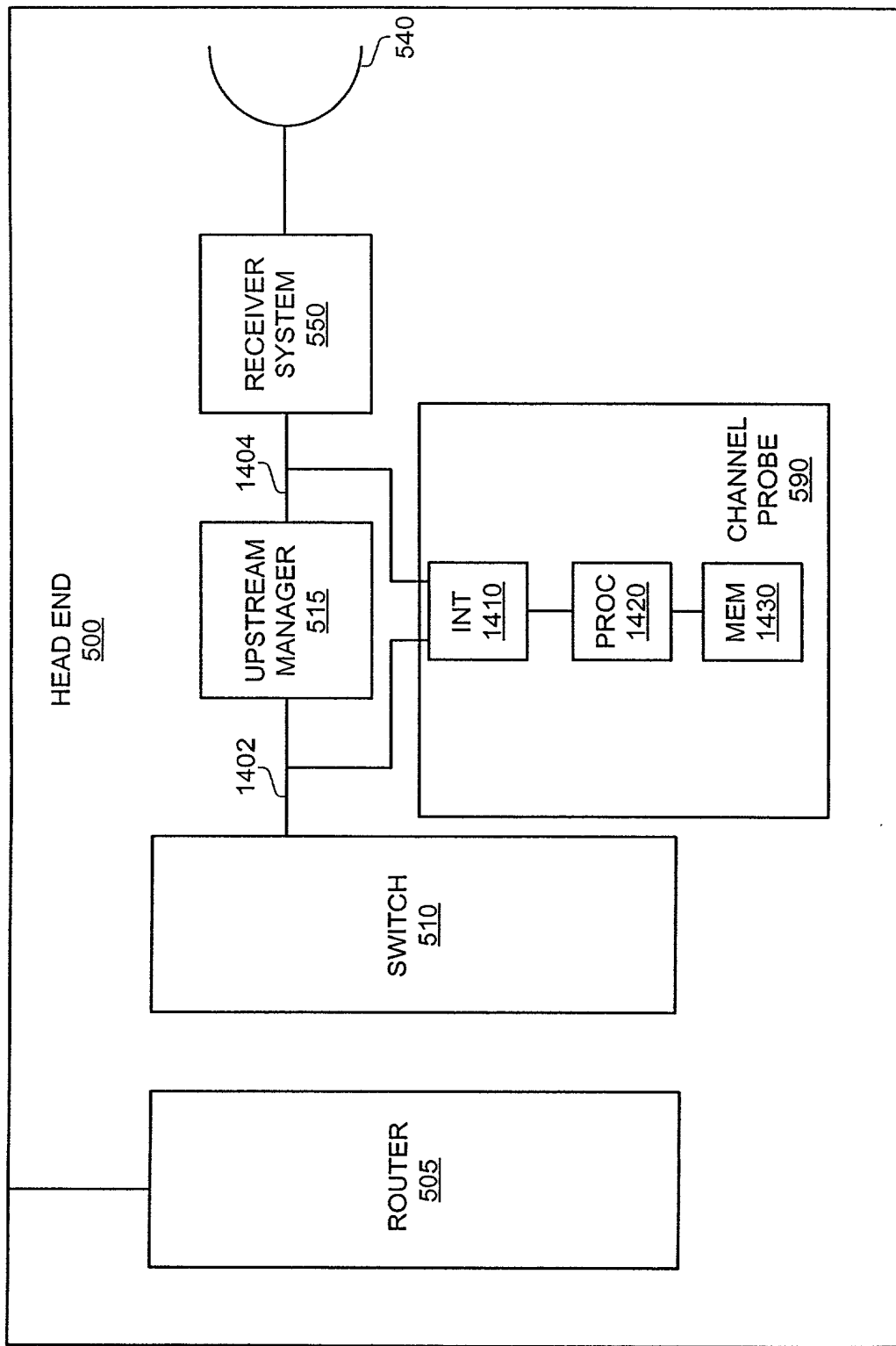


FIG. 14

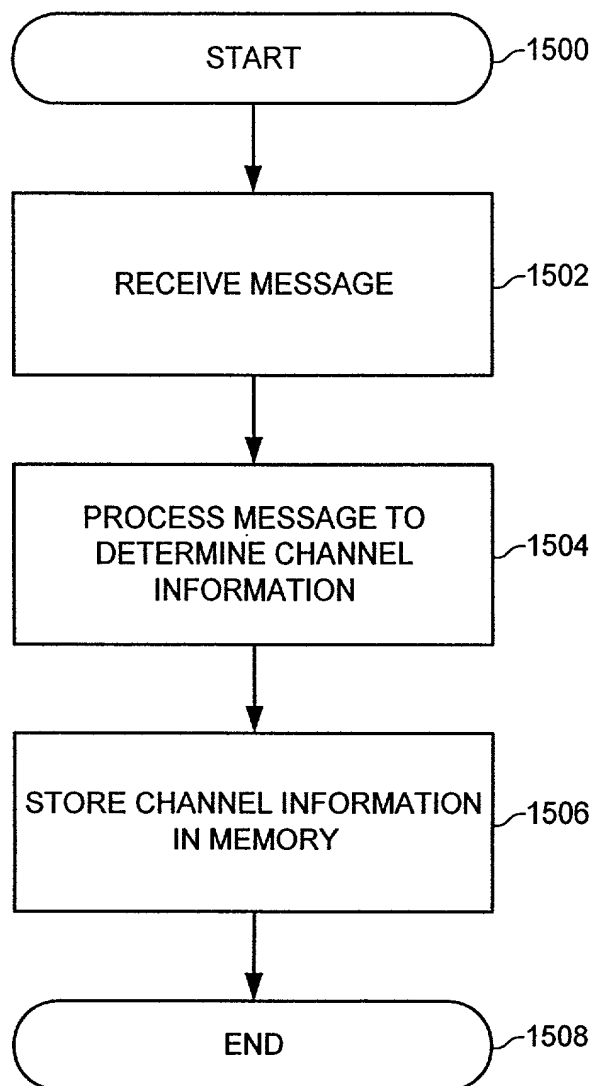


FIG. 15

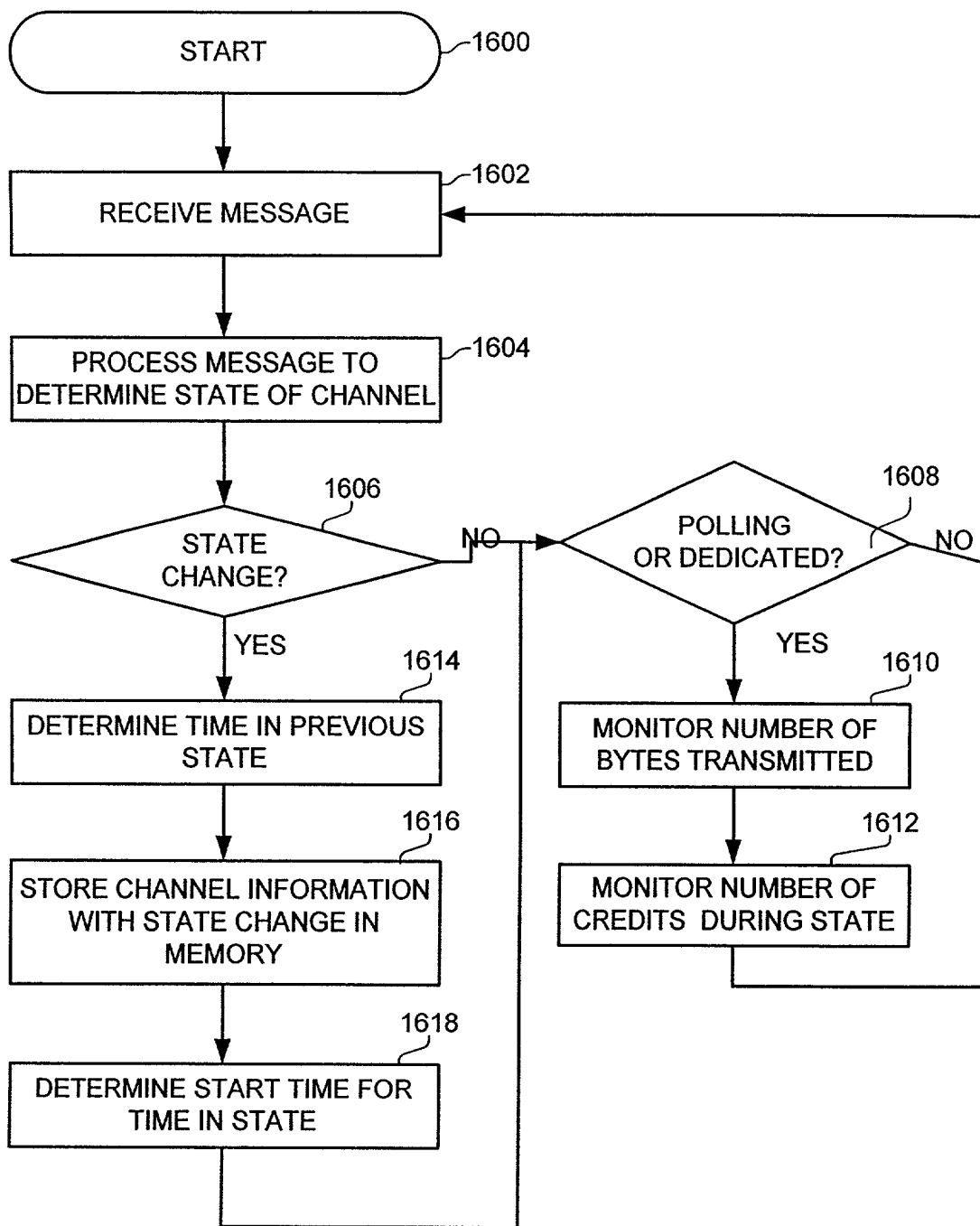


FIG. 16

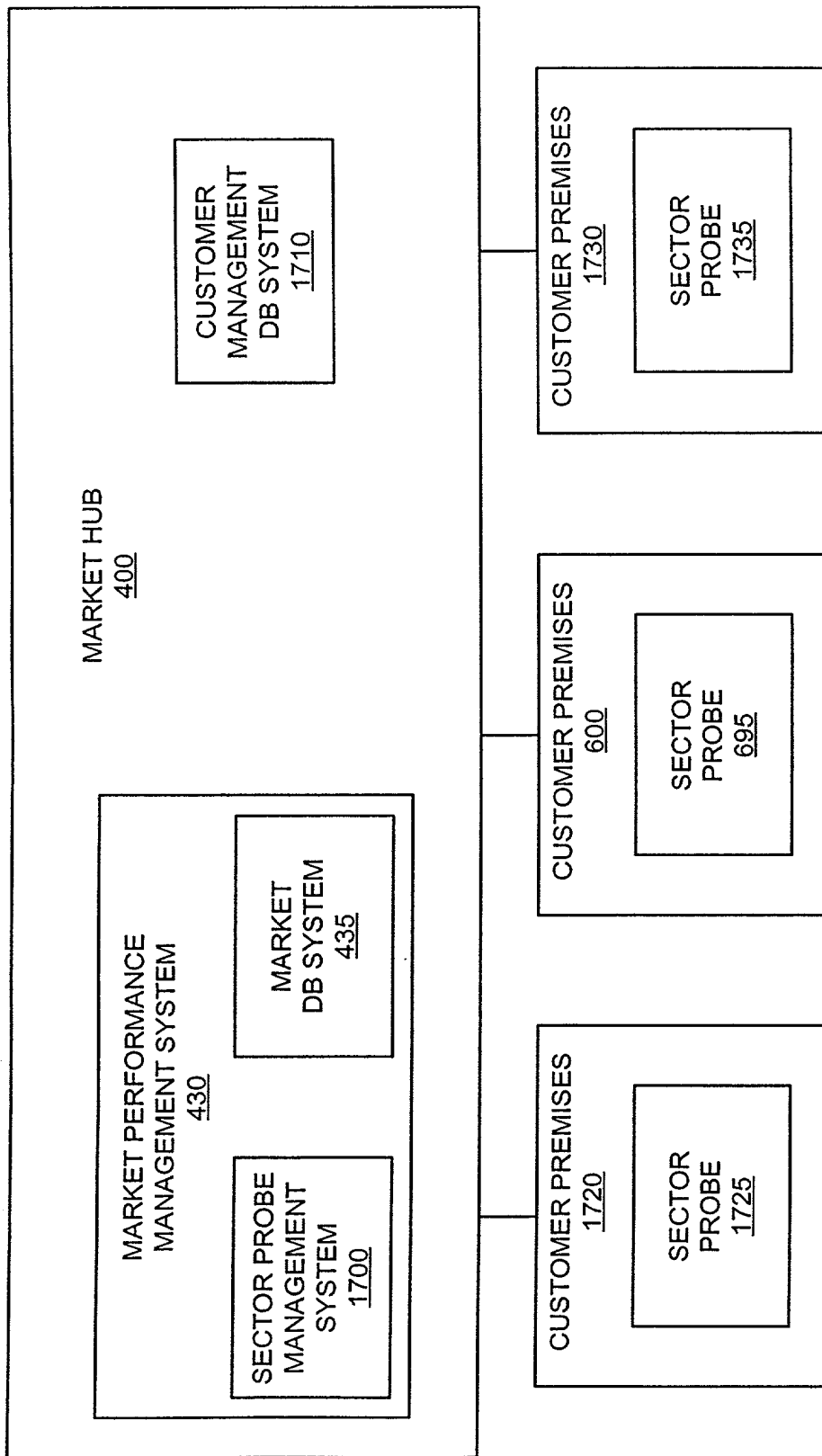


FIG. 17

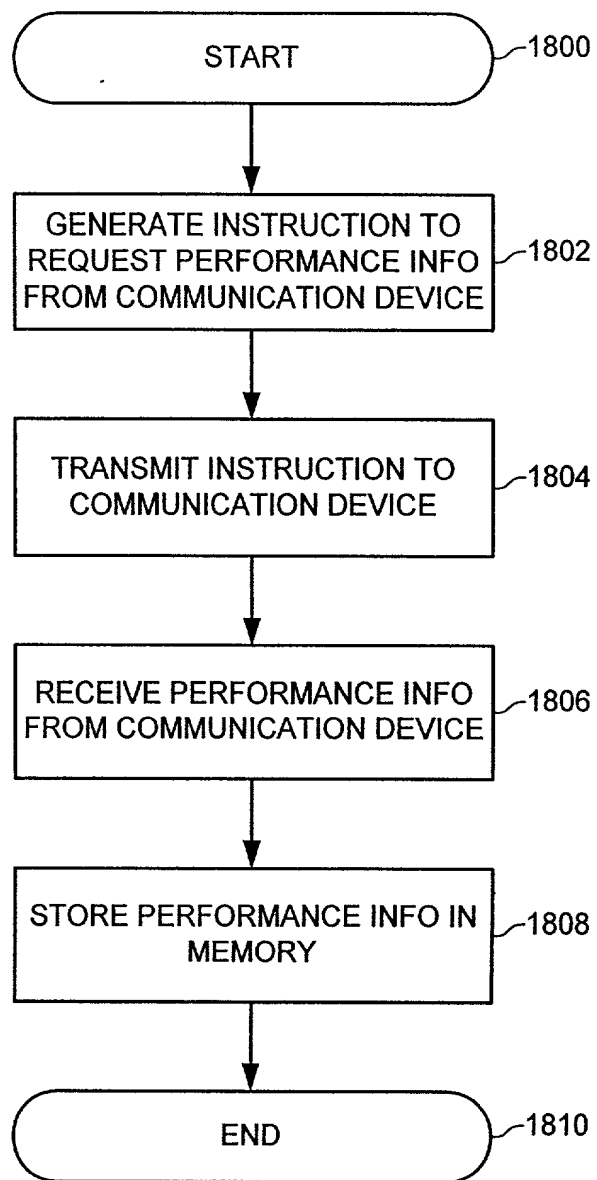


FIG. 18

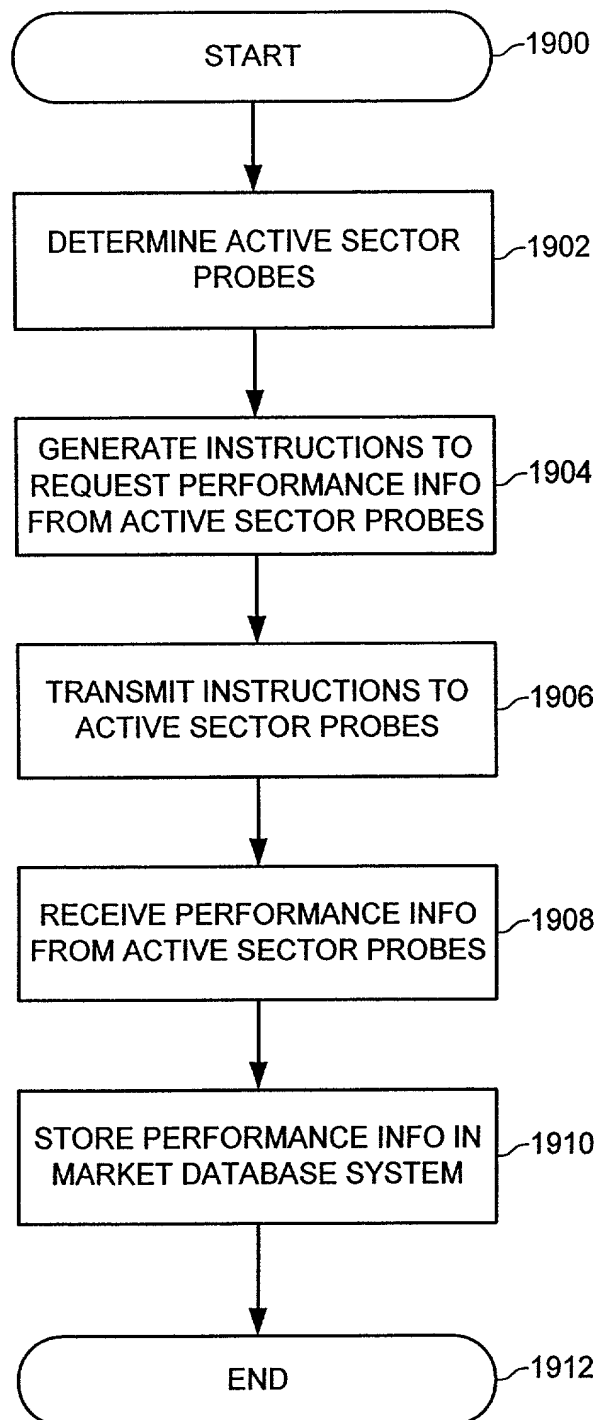


FIG. 19

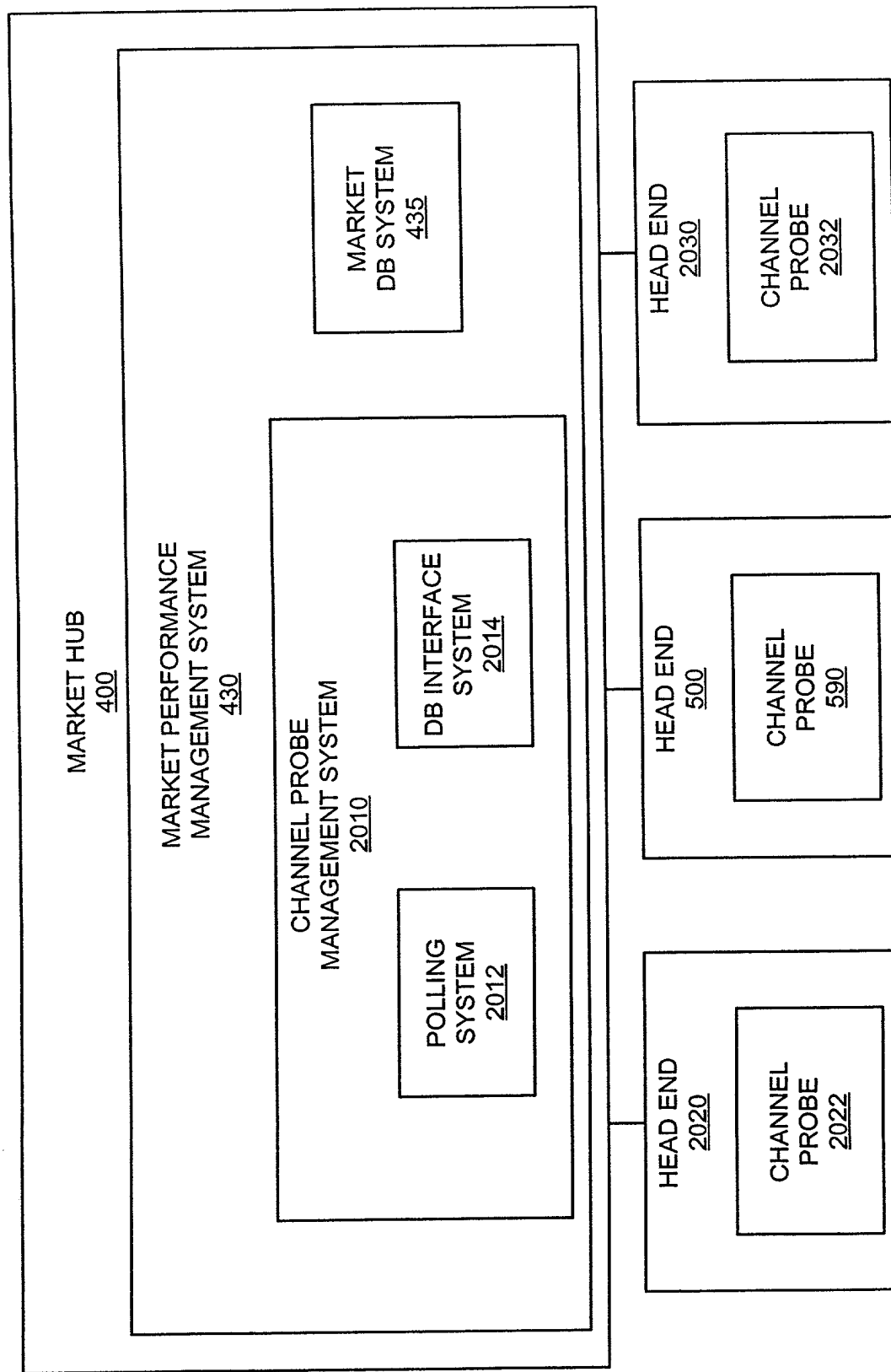


FIG. 20

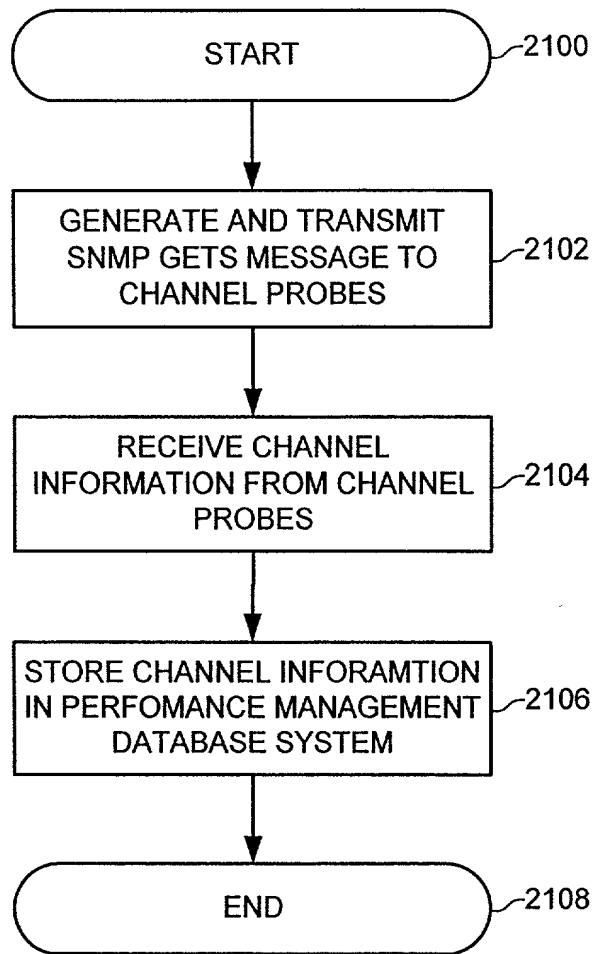


FIG. 21

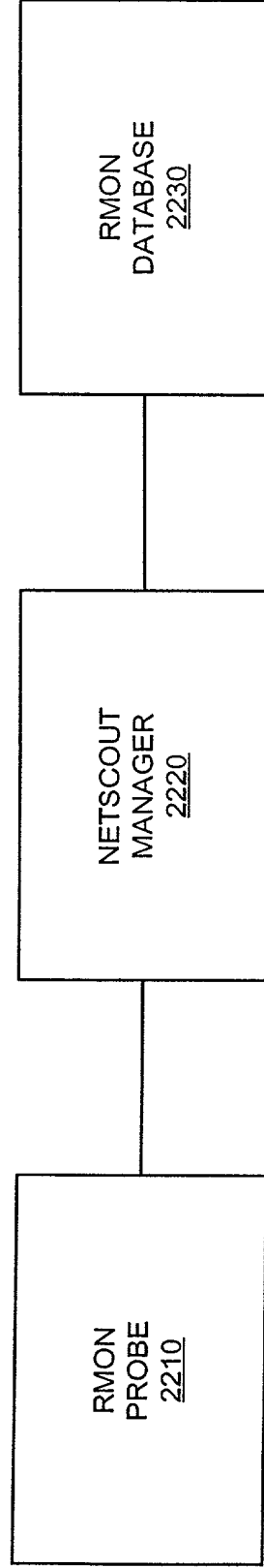


FIG. 22
PRIOR ART

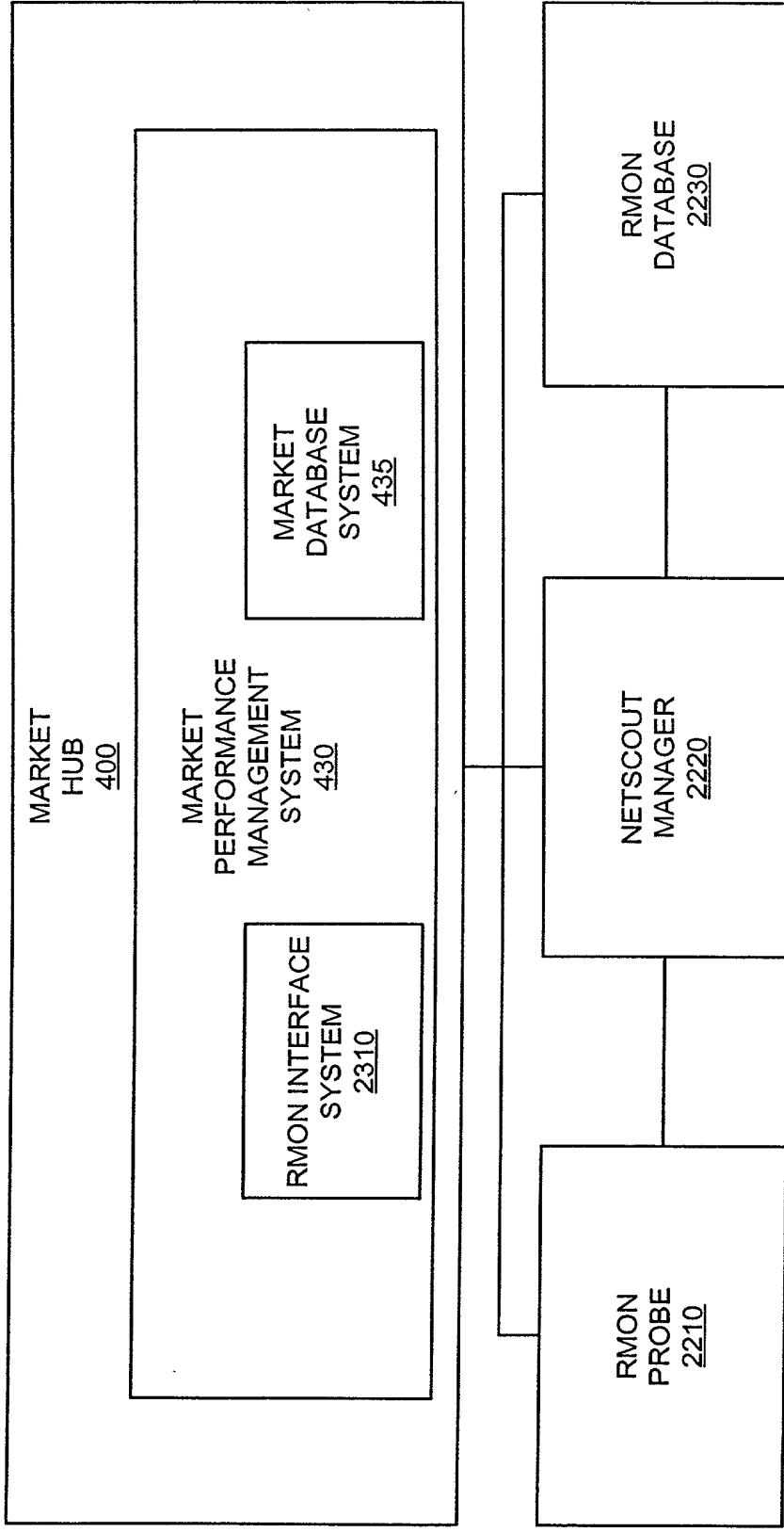


FIG. 23

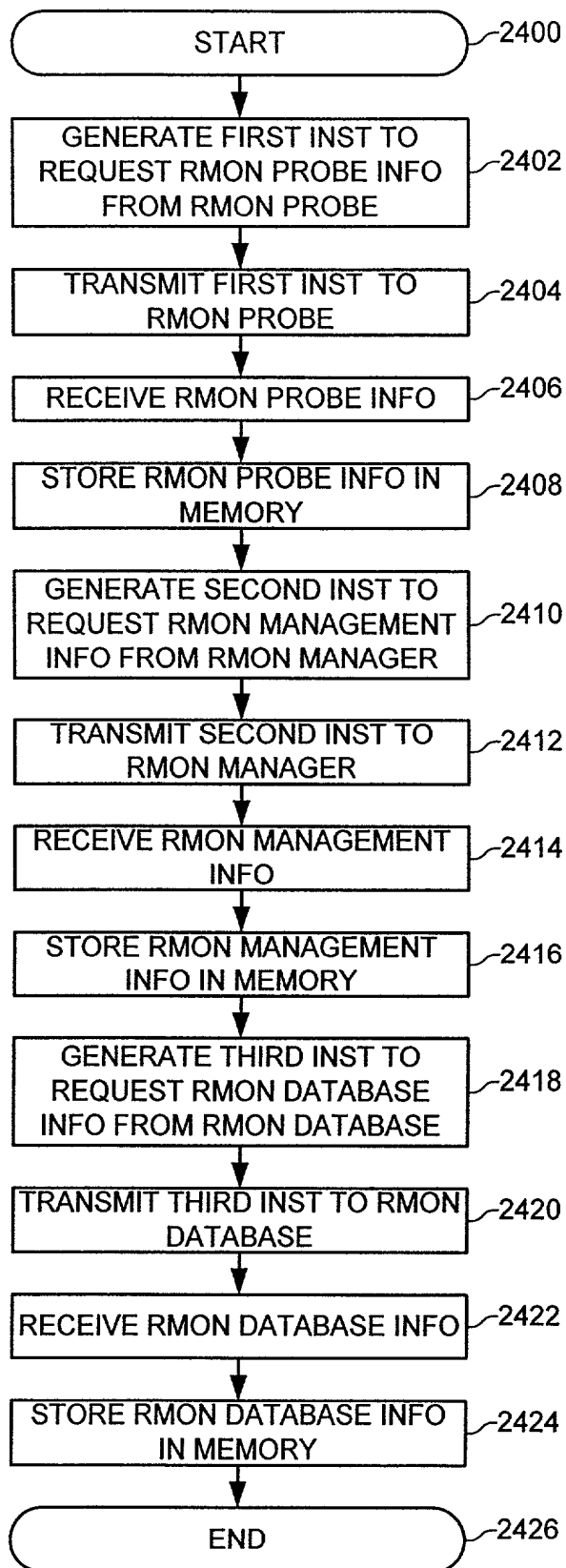


FIG. 24

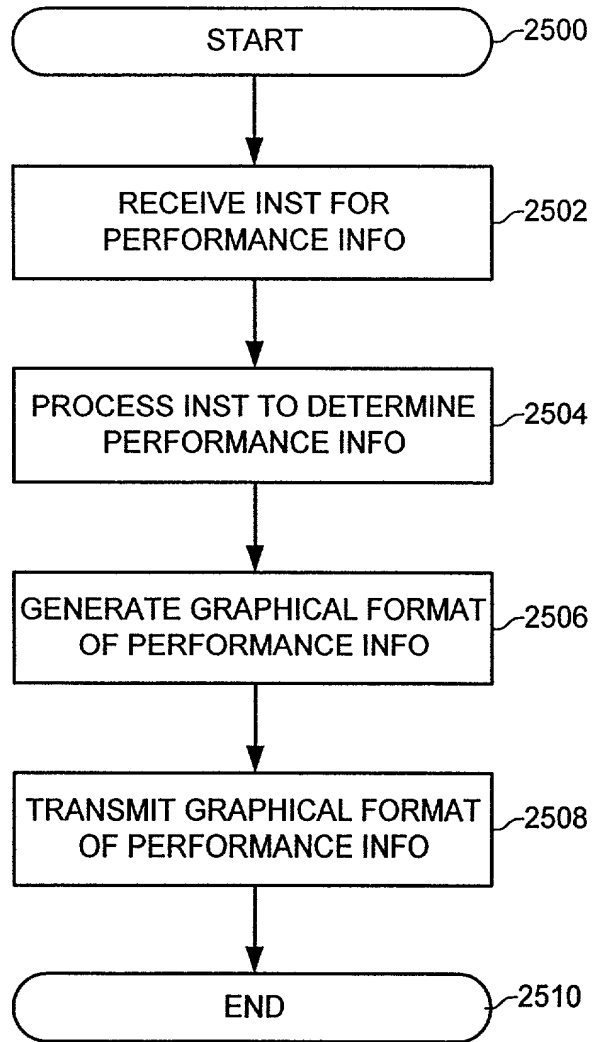


FIG. 25

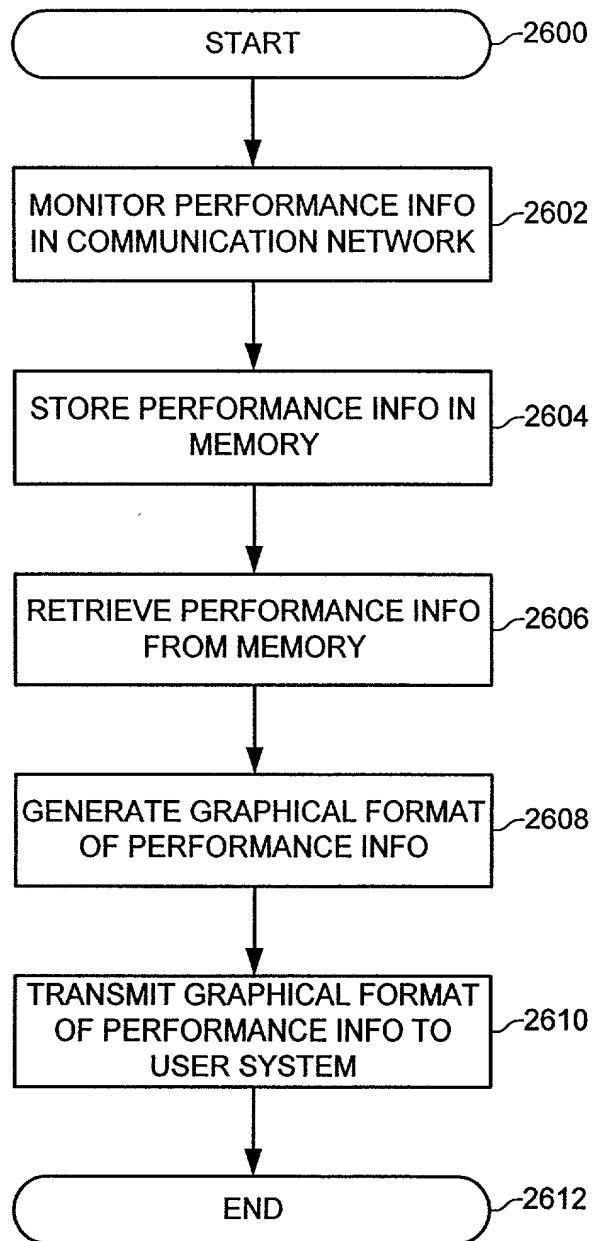


FIG. 26

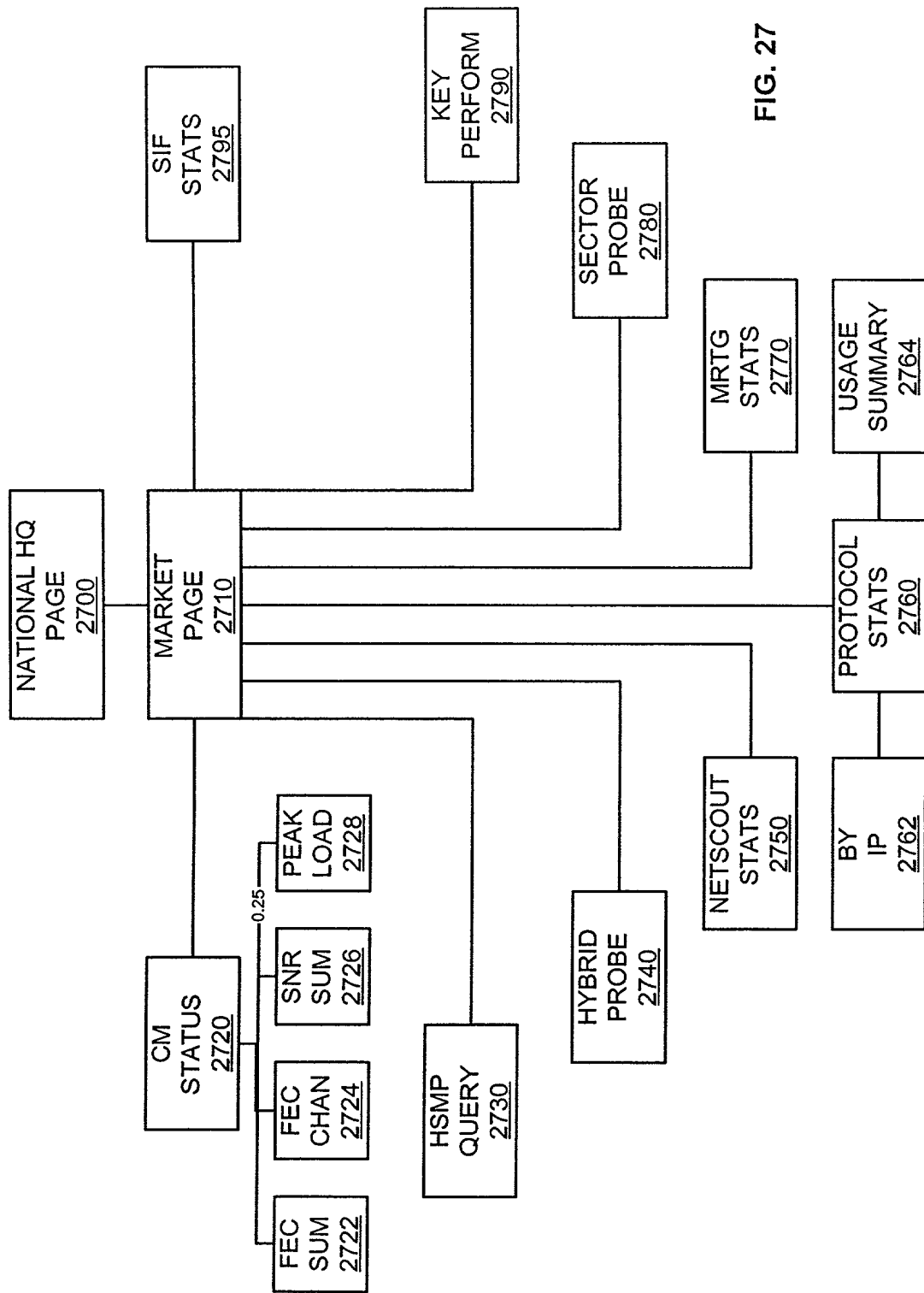


FIG. 27

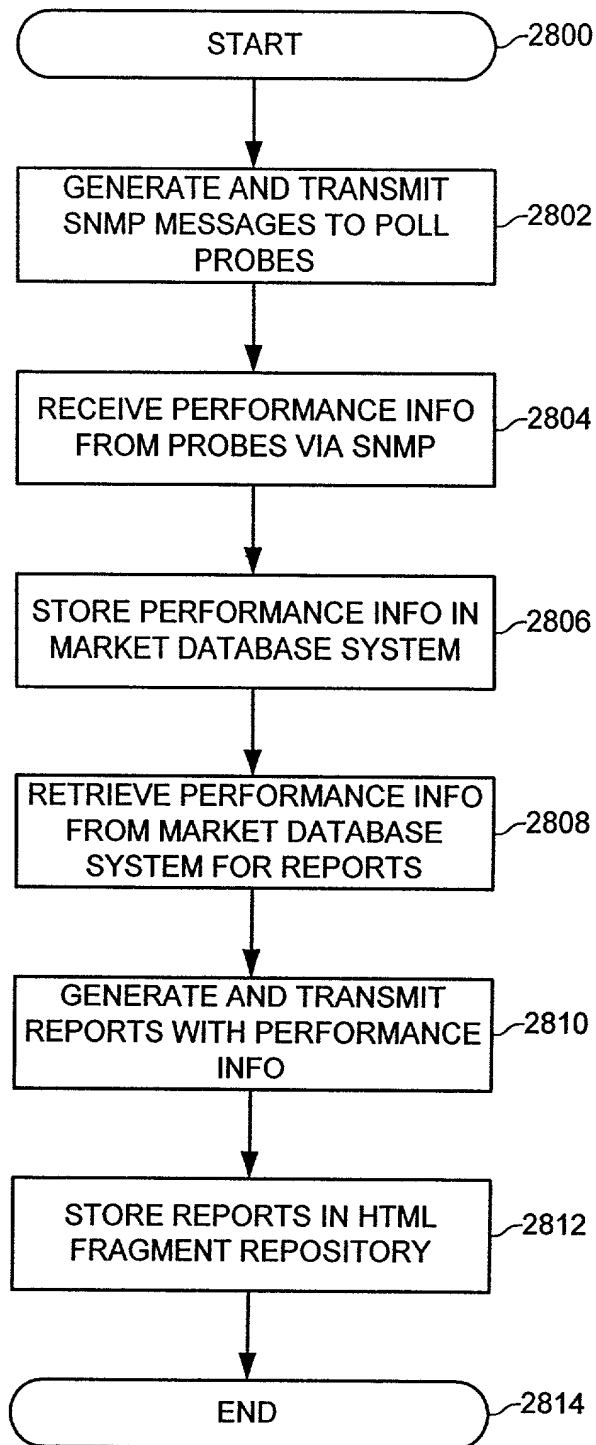


FIG. 28

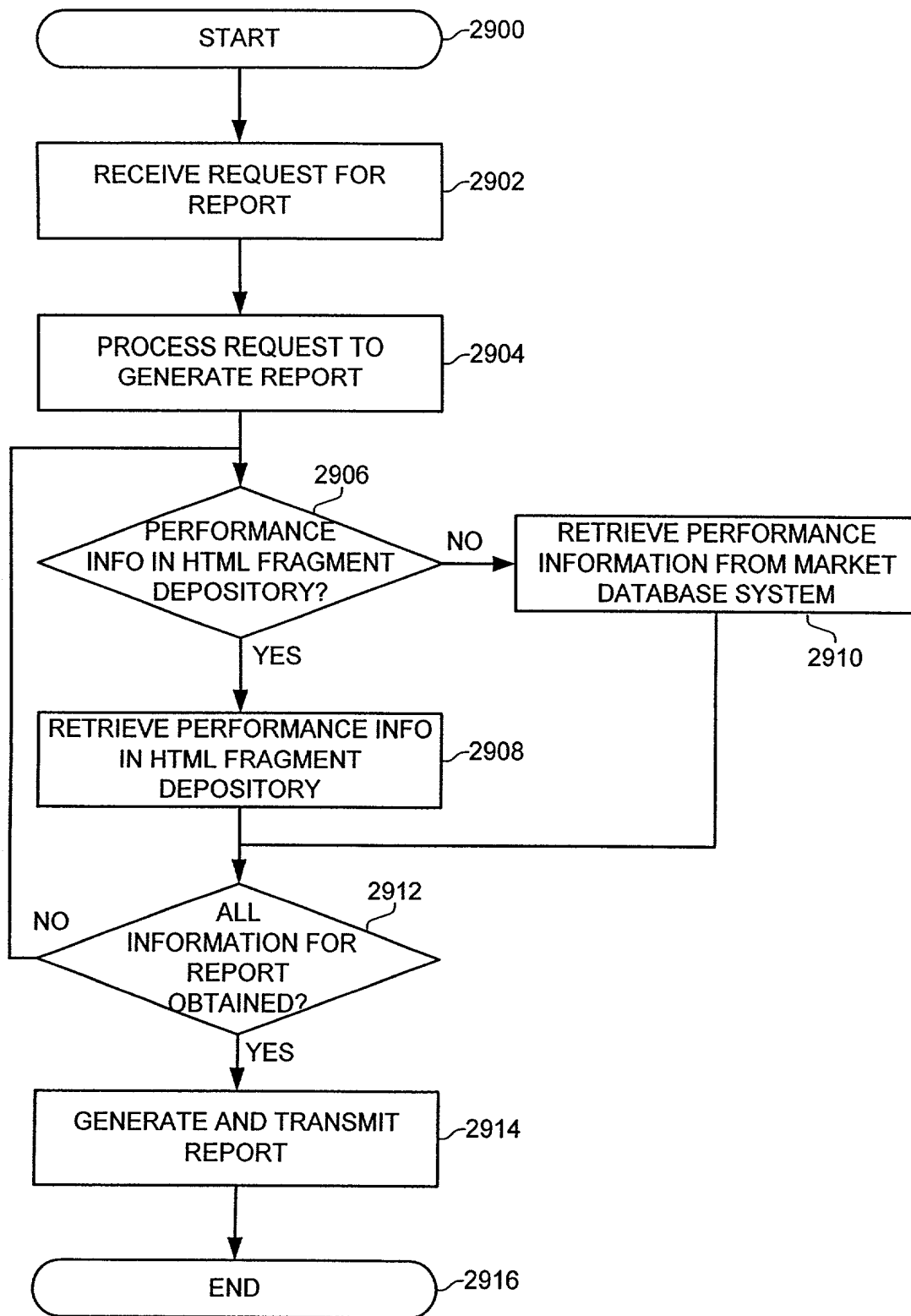


FIG. 29

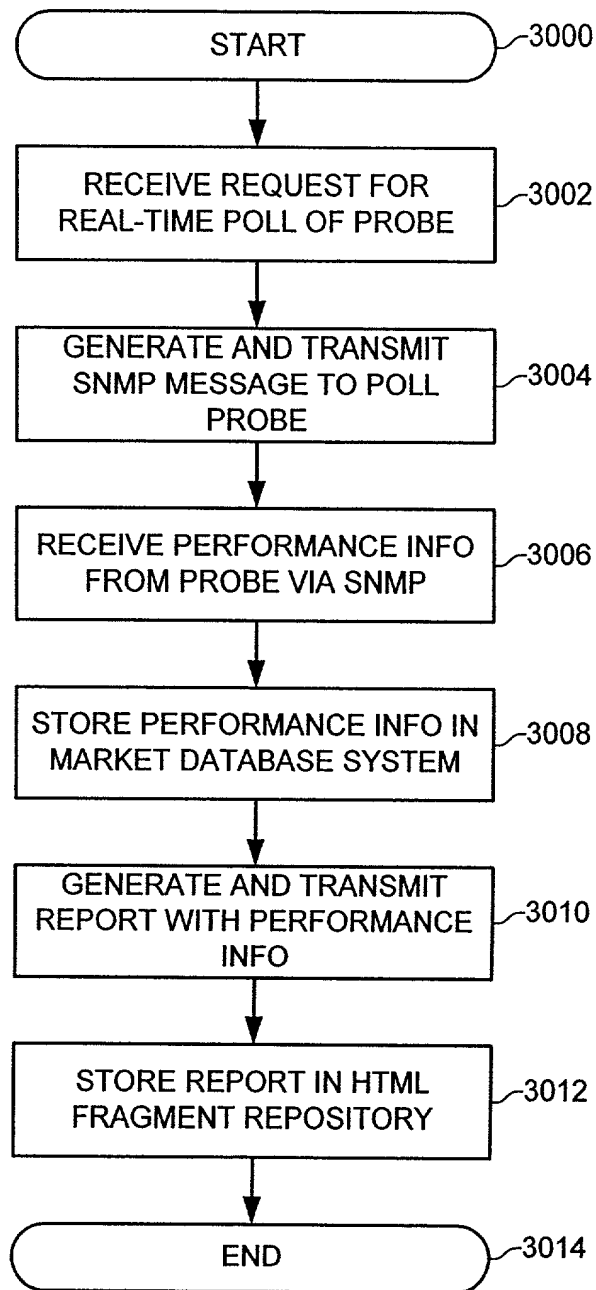


FIG. 30

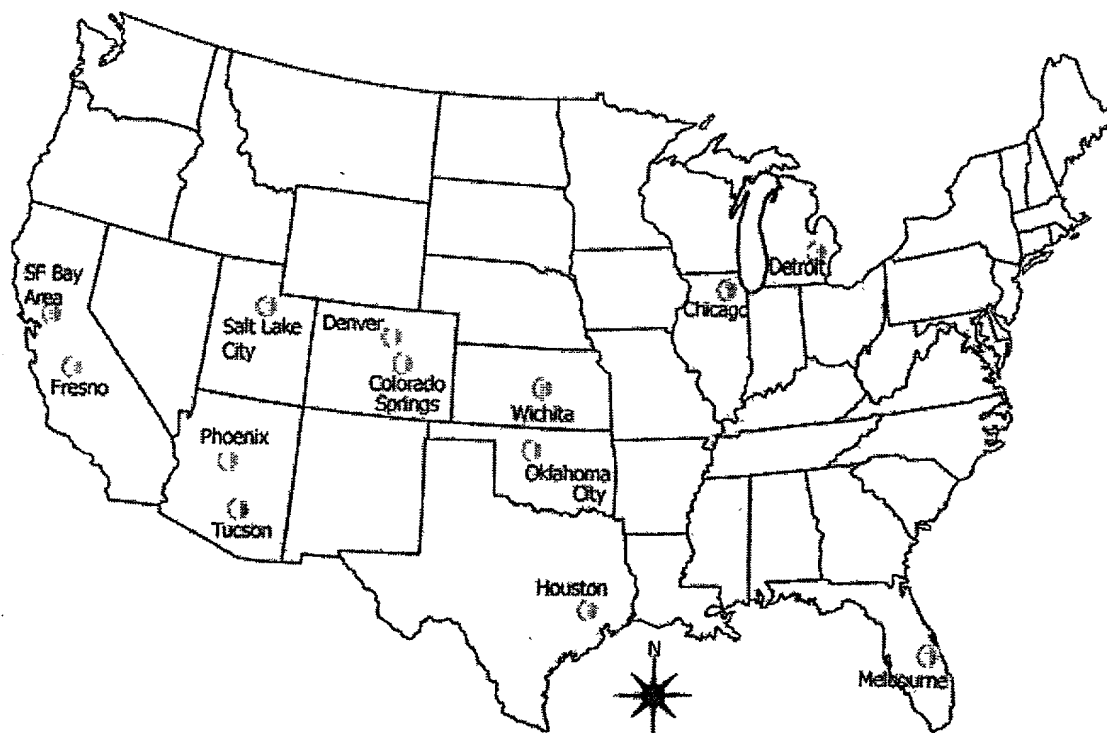


FIG. 31



WELCOME TO VERTEX! To navigate this site, links are located in the gray box below the thick red line. Inside the thick red line you will find a selection of categories to choose from. Click on one of these categories to display it's related links, then click on the link you want and you are there. One special note. The 'Markets' links will take you to the same report you are currently at, in the market you choose.

Questions?: Click on the button named 'HELP' in the upper right-hand corner.

Visibility into the network is a primary concern of the Vertex team. It is the job of the network management architecture to enable this visibility. Without it, the network cannot be effectively run: faults cannot be located and corrected, capacity planning cannot be done, and progressive problems cannot be found and stopped from reaching a critical stage until it is too late.

The architecture is divided up into three parts: collectors (also known as 'probes'), data warehouses, and reporting tools. Collectors include devices such as the NetScout RMON probe and two in-house engineered probes, the Hybrid Probe and the Sector Probe. Data warehouses consist of Oracle databases residing on Market and National Vertex Servers. These databases run on Sun Microsystems UNIX workstations that have RAID mass storage systems built in. The reporting tools are primarily the web-based tools hosted by the Market VERTEX Servers.

FIG. 32

User/Channel Distribution by Sector

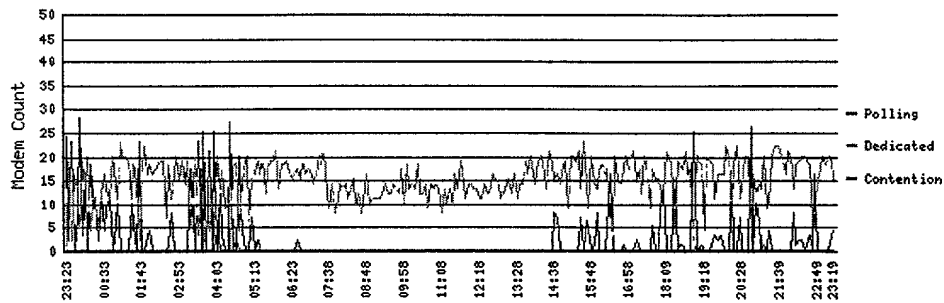
Load and Capacity for All Sectors.

Enter Query Date in YYYYMMDD format:

Sector sb-035

Click on the summary for detailed graphs.

Sector sb-035 between 2001-12-03 23:23:10 and 2001-12-04 23:19:00

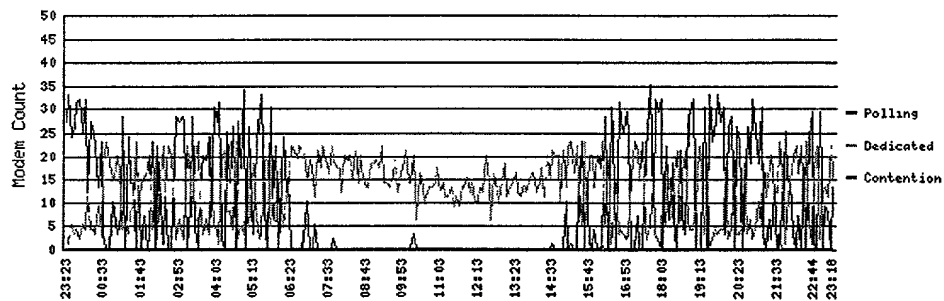


[\[FEC Summary\]](#) [\[FEC Channel\]](#) [\[SNR Summary\]](#) [\[Peak Load/Capacity: 52 %\]](#)

Sector sb-083

Click on the summary for detailed graphs.

Sector sb-083 between 2001-12-03 23:23:08 and 2001-12-04 23:18:57



[\[FEC Summary\]](#) [\[FEC Channel\]](#) [\[SNR Summary\]](#) [\[Peak Load/Capacity: 56 %\]](#)

Sector sb203-32

Click on the summary for detailed graphs.

FIG. 33

FEC Summary Graph for sb-035

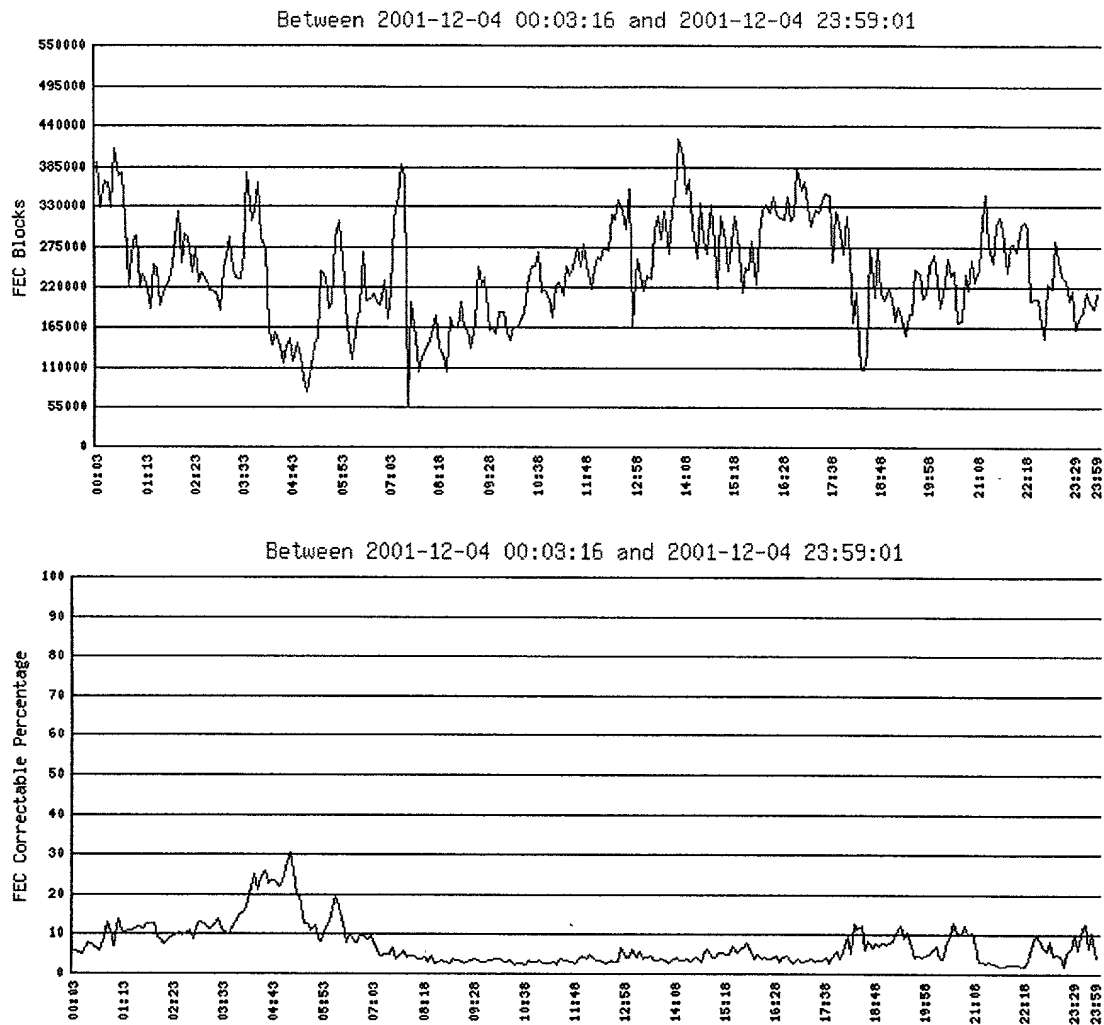


FIG. 34

Channel detail graph for sb203-32 channel 2

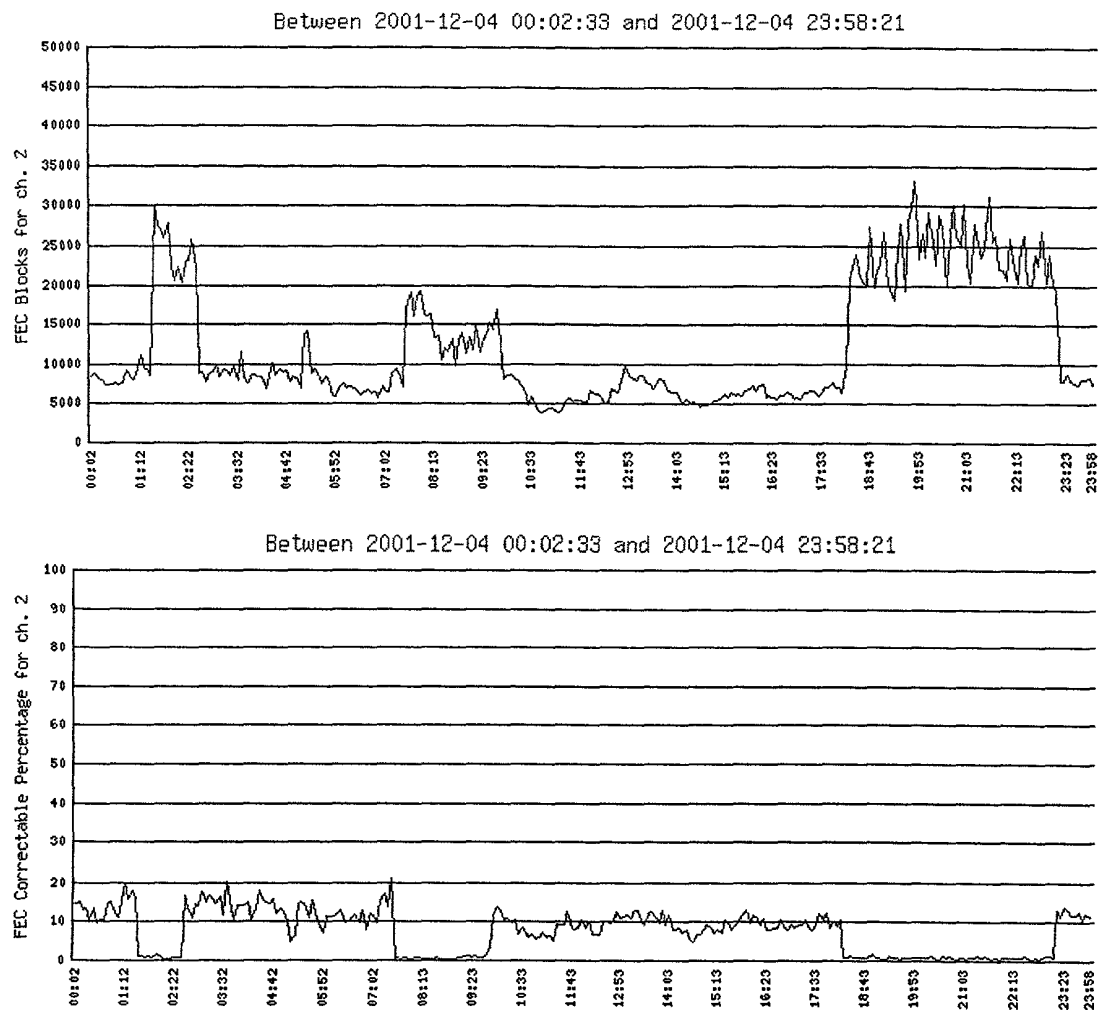


FIG. 35

Signal to Noise graph for sb203-32

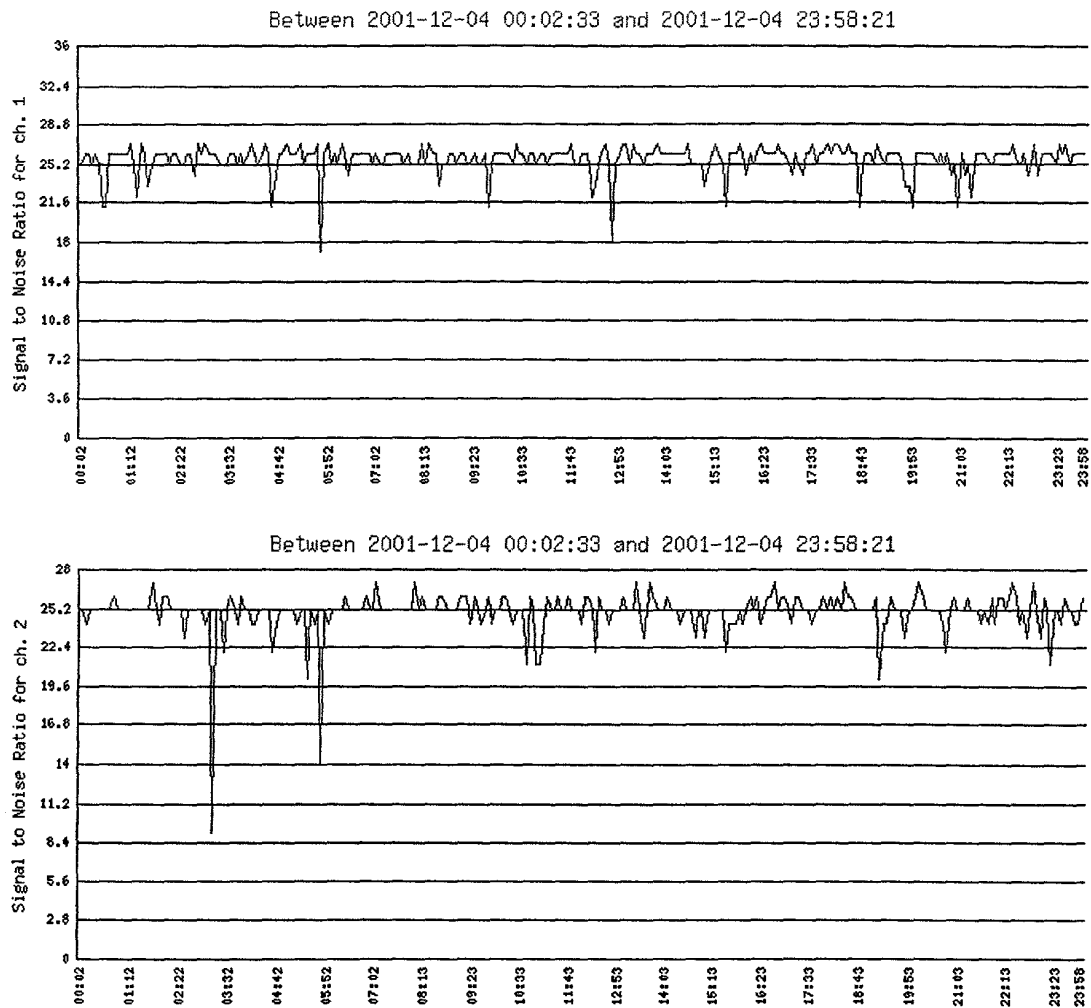


FIG. 36

TABLE 1		TABLE 2	
Summary of the results of the 1990-1991 survey		Summary of the results of the 1992-1993 survey	
Variable	Value	Variable	Value
Number of respondents	100	Number of respondents	100
Age (mean)	45.5	Age (mean)	46.5
Gender (male/female)	50/50	Gender (male/female)	50/50
Education (mean)	12.5	Education (mean)	12.5
Occupation (mean)	1.5	Occupation (mean)	1.5
Income (mean)	1.5	Income (mean)	1.5
Health status (mean)	1.5	Health status (mean)	1.5
Stress level (mean)	1.5	Stress level (mean)	1.5
Life satisfaction (mean)	1.5	Life satisfaction (mean)	1.5
Family size (mean)	1.5	Family size (mean)	1.5
Marital status (mean)	1.5	Marital status (mean)	1.5
Religious affiliation (mean)	1.5	Religious affiliation (mean)	1.5
Political affiliation (mean)	1.5	Political affiliation (mean)	1.5
Employment status (mean)	1.5	Employment status (mean)	1.5
Home ownership (mean)	1.5	Home ownership (mean)	1.5
Auto ownership (mean)	1.5	Auto ownership (mean)	1.5
Travel frequency (mean)	1.5	Travel frequency (mean)	1.5
Exercise frequency (mean)	1.5	Exercise frequency (mean)	1.5
Alcohol consumption (mean)	1.5	Alcohol consumption (mean)	1.5
Tobacco consumption (mean)	1.5	Tobacco consumption (mean)	1.5
Drug consumption (mean)	1.5	Drug consumption (mean)	1.5
Overall health score (mean)	1.5	Overall health score (mean)	1.5

Sector sb203-32 between 2001-12-04 00:02:33 and 2001-12-04 23:58:21

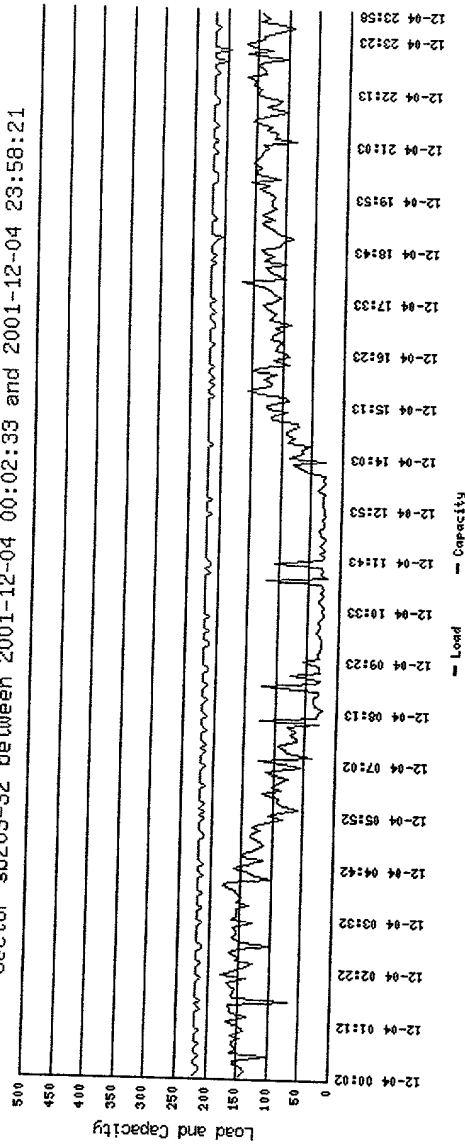


FIG. 37

HSMP Gateway	
Access Level	BWG Engineer
IP Address e.g, 24.221.13.83	<input type="text"/> <i>Note:</i> Enter a customer/WBR IP address -OR- a UUID
UUID e.g, 149219	<input type="text"/> <i>Note:</i> Enter the WBR's MAC address, per Merlin
Query Type	<p><input checked="" type="radio"/> Standard queries:</p> <div> <div>hybs ▲</div> <div>qpsk tstat</div> <div>qpsk stat</div> <div>qpsk gdump</div> <div>qams</div> <div>hostname</div> <div>hybs so0</div> <div>hybs so1 ▼</div> </div> <p>(Hold down the 'CTRL' key to select multiple queries)</p> <p><input type="radio"/> Custom query: <input type="text"/></p> <p><i>Note:</i> Only administrators can perform custom queries and only supervisors/leads can send <i>ginit</i>, <i>rngpwr</i>, and <i>exit</i> commands.</p>
<input type="button" value="Submit Request(s)"/>	
<p>Warning: This could take up to 30 seconds per query; please be patient</p>	

FIG. 38

Hybrid Probe - Phoenix

Start date: 12-11-00 Start time: 00:00:00

End date: 12-11-00 End time: 21:34:07

Number of entries: 10

CSV Format ☐

Get Results

Start time: 12-11-00 00:00:00 GMT

End time: 12-11-00 21:34:07 GMT

Currently: 12-11-00 21:34:25 GMT

IP Address	Active - %	Ratio	Poll - Timer	Ded - Timer	Poll - Tx bytes	Ratio	Ded - Tx bytes	Ratio	Index	Ratio
Total (all)	N/A	N/A	0:0:0:0:0	0:0:0:0:0	N/A	N/A	N/A	N/A		N/A
Average (all)	N/A	N/A	0:0:0:0:1	0:0:0:0:1	N/A	N/A	N/A	N/A	1	N/A

FIG. 39

Top Talkers

Total Users = 476

Total number of upstream bytes for all users = 37959.79 MB

Total number of downstream bytes for all users = 78291.14 MB

Average number of upstream bytes per user = 79.75 MB

Average number of downstream bytes per user = 164.48 MB

Date Range Searched: From 2001-12-04 00:00:00 to 2001-12-04 23:59:59

CMID	Up MB	% of Total	Information	CMID	Down MB	% of Total	Information
10113995201	1396.48	3.68	Info Detail	10033145001	4495.26	5.74	Info Detail
10300017795	1252.04	3.30	Info Detail	10113995201	3860.84	4.93	Info Detail
10045700301	1185.84	3.12	Info Detail	10300015592	2941.91	3.76	Info Detail
10043134301	1074.78	2.83	Info Detail	10046161801	2854.52	3.65	Info Detail
10300024189	952.64	2.51	Info Detail	10300036933	2353.44	3.01	Info Detail
10045370901	945.70	2.49	Info Detail	10300026883	1907.78	2.44	Info Detail
10060649801	876.35	2.31	Info Detail	10300049340	1602.27	2.05	Info Detail
10300049099	861.39	2.27	Info Detail	10043134301	1551.04	1.98	Info Detail
10048528301	849.71	2.24	Info Detail	10026884901	1520.79	1.94	Info Detail
10300042276	835.36	2.20	Info Detail	10063273601	1520.67	1.94	Info Detail
10041614401	779.71	2.05	Info Detail	10113986301	1489.38	1.90	Info Detail
10080408901	746.92	1.97	Info Detail	10300033843	1435.02	1.83	Info Detail
10300014579	727.49	1.92	Info Detail	10045370901	1430.11	1.83	Info Detail
10300039579	702.54	1.85	Info Detail	10063207801	1381.60	1.76	Info Detail
10044769601	660.30	1.74	Info Detail	10300042788	1323.12	1.69	Info Detail
10063484801	654.68	1.72	Info Detail	10045140201	1258.60	1.61	Info Detail
10300067076	635.97	1.68	Info Detail	10044181901	1210.90	1.55	Info Detail
10043370701	621.19	1.64	Info Detail	10113953301	1197.58	1.53	Info Detail
10300080498	604.89	1.59	Info Detail	10047055801	1122.13	1.43	Info Detail
10300013790	569.02	1.50	Info Detail	10040944301	1094.73	1.40	Info Detail

FIG. 40

Detail Informaiton for CMID 10000002309

Breakdown By Protocol

Protocol	Upstream Bytes	% of Total	Downstream Bytes	% of Total
HTTPS	437990	0	3649130	0
IP	1077630687	99	1089385948	99
Totals	1078068677		1093035078	

Breakdown By IP Address

IP Address	Upstream Bytes	% of Total	Downstream Bytes	% of Total
24.221.206.66	1077630687	99	1089385948	99
24.221.206.71	437990	0	3649130	0
Totals	1078068677		1093035078	

Breakdown of Protocols for IP Address 24.221.206.66

Protocol	Upstream Bytes	% of Total	Downstream Bytes	% of Total
IP	1077630687	100	1089385948	100
Totals	1077630687		1089385948	

FIG. 41

Statistics for Market ID 00000010, Market name = Phoenix (new)

Bad cmd's encountered = 0

Market ID	Date	HR	# of Subscribers	Mb Per Hour	Avg Per Subscriber	Avg MBPS	Peak # of MBPS
00000010	2000-12-12	00	000003	000000054.53	001817.00	000000.01	000000026.01
00000010	2000-12-12	01	000003	000000158.73	005291.00	000000.04	000000118.64
00000010	2000-12-12	02	000002	000000187.85	009392.00	000000.05	000000102.37
00000010	2000-12-12	08	000001	000000055.31	005531.00	000000.01	000000055.31
00000010	2000-12-12	10	000004	000000140.21	003505.00	000000.03	000000084.61
00000010	2000-12-12	11	000001	000000008.07	000807.00	000000.00	000000008.07
00000010	2000-12-12	12	000004	000000024.41	000610.00	000000.00	000000013.55
00000010	2000-12-12	13	000001	000000002.41	000241.00	000000.00	000000002.41
00000010	2000-12-12	15	000001	000000008.83	000883.00	000000.00	000000008.83
00000010	2000-12-12	17	000001	000000001.28	000128.00	000000.00	000000001.28
00000010	2000-12-12	19	000001	000000025.82	002582.00	000000.00	000000025.82
00000010	2000-12-12	20	000001	000000024.97	002497.00	000000.00	000000024.97
00000010	2000-12-12	21	000001	000000023.37	002337.00	000000.00	000000023.37

Statistics for udfg id 526, udfg name = south mtn 101-32/36

Total subscribers in SIF: 110

Udfg ID	Date	HR	Active Subscribers	MegaBits Per Hour	Avg Per Subscriber Per Second	Peak # of MBPS
526	2000-12-11	00	3	34.30	19.10	27.21
526	2000-12-11	01	5	541.81	180.181	388.12
526	2000-12-11	02	2	128.5	10.85	73.6
526	2000-12-11	03	5	761.39	253.239	731.53
526	2000-12-11	04	2	6.14	5.14	5.75
526	2000-12-11	05	5	442.1	14.221	403.91
526	2000-12-11	06	4	266.43	111.3	159.45
526	2000-12-11	07	2	2.99	2.59	1.94
526	2000-12-11	08	2	486.33	405.33	363.5
526	2000-12-11	09	4	312.11	130.11	221.18
526	2000-12-11	10	3	1111.96	617.136	797.57
526	2000-12-11	11	3	49.74	27.114	27.77
526	2000-12-11	12	4	50.63	21.23	41.30
526	2000-12-11	13	3	281.76	156.96	204.44
526	2000-12-11	14	6	598.4	16.224	319.80
526	2000-12-11	15	3	778.66	432.106	525.49
526	2000-12-11	16	3	12.77	7.17	11.60
526	2000-12-11	17	2	27.20	22.80	26.46
526	2000-12-11	18	5	14.80	4.280	6.12
526	2000-12-11	19	1	1.90	3.10	1.90
526	2000-12-11	20	5	44.86	14.286	35.99

FIG. 42

Detail for IP nnn nnn nnn nnn from to 2000-12-12 23:59:59

This is a protocol breakdown for traffic from this IP address. This includes all protocol types, including all TCP and UDP protocols. Two special protocols, TCP~ and UDP~, correspond to "unknown TCP protocol" and "unknown UDP protocol". This means that we don't really know what kind of traffic it is at this point.

Protocol	Downstream KBytes	Upstream KBytes
----------	-------------------	-----------------

Totals: Protocol Summary - 2000-12-12 00:00:00 to 2000-12-12 23:59:59

Up: Kbytes This is a list of the most popular protocols on our network for the chosen date range. Measurements are in Megabytes and the da
Down: Kbytes range is inclusive. Again, TCP~ and UDP~ represent "other" TCP and UDP apps which have not yet been identified.

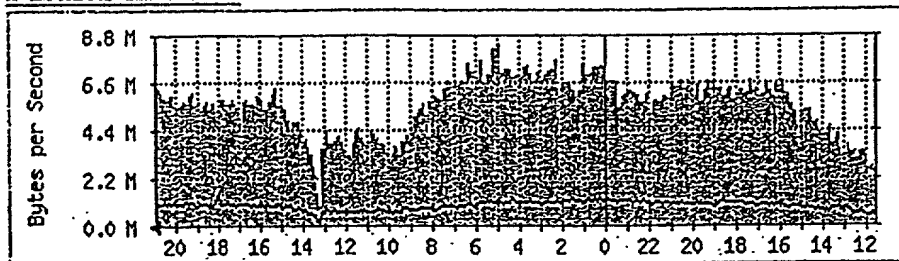
Protocol Name	Megabytes Transferred
NNTP	60997.67
TCP~	20632.16
NAPSTER	10798.85
FTP-DATA	8756.72
HTTP	6938.55
UDP~	3909.48
HTTPS	1215.48
POP3	571.60
AOL	183.04
FTP-CTRL	12.31
REALAUD	10.20
TELNET	8.48
SOCKET	6.92
SQLNET_N	4.31
SUNRPC_T	0.10
COMPUSRV	0.04

FIG. 43

Router Traffic Analysis

Daily Graph (5 Minute Average)

FastEthernet5/0/0



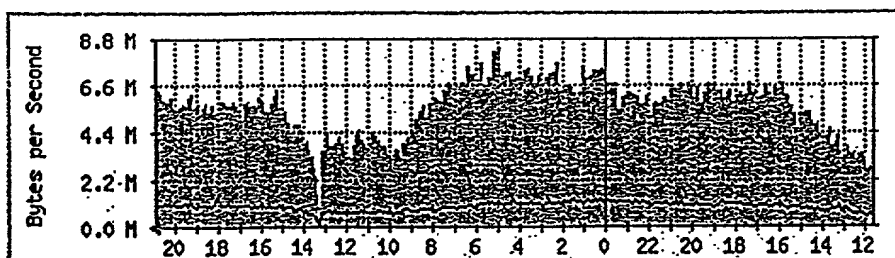
Traffic Analysis for FastEthernet5/0/0

edge01.phoenix.speedchoice.com

System: edge01.phoenix.speedchoice.com in
Maintainer:
Description: FastEthernet5/0/0
ifType: ethernetCsmacd (6)
ifName: Fa5/0/0
Max Speed: 12.5 MBytes/s
Ip: 207.240.93.202 (edge01)

The statistics were last updated Friday, 15 December 2000 at 21:00,
at which time 'edge01.phoenix.speedchoice.com' had been up for 84 days, 10:51:32.

'Daily' Graph (5 Minute Average)



Max In:8409.8 kB/s (67.3%) Average In:5645.1 kB/s (45.2%) Current In:6166.0 kB/s (49.3%)
Max Out:1446.9 kB/s (11.6%) Average Out: 944.8 kB/s (7.6%) Current Out: 1017.5 kB/s (8.1%)

FIG. 44

Sector sm102-32

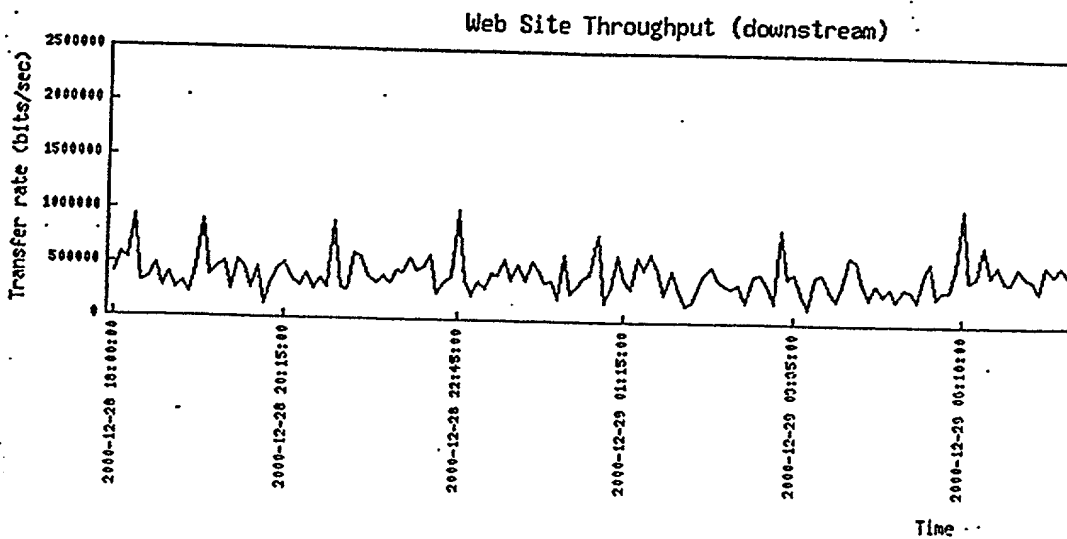
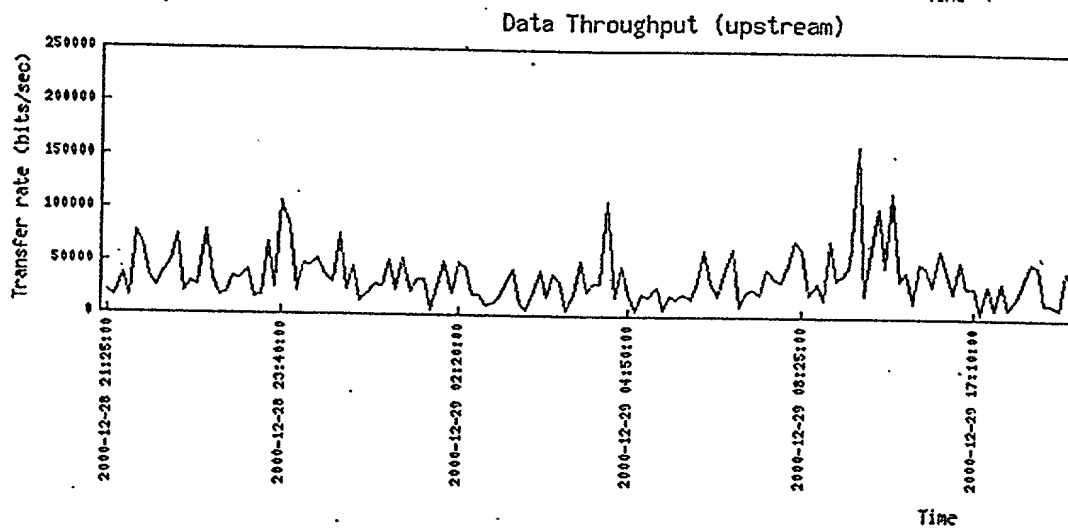
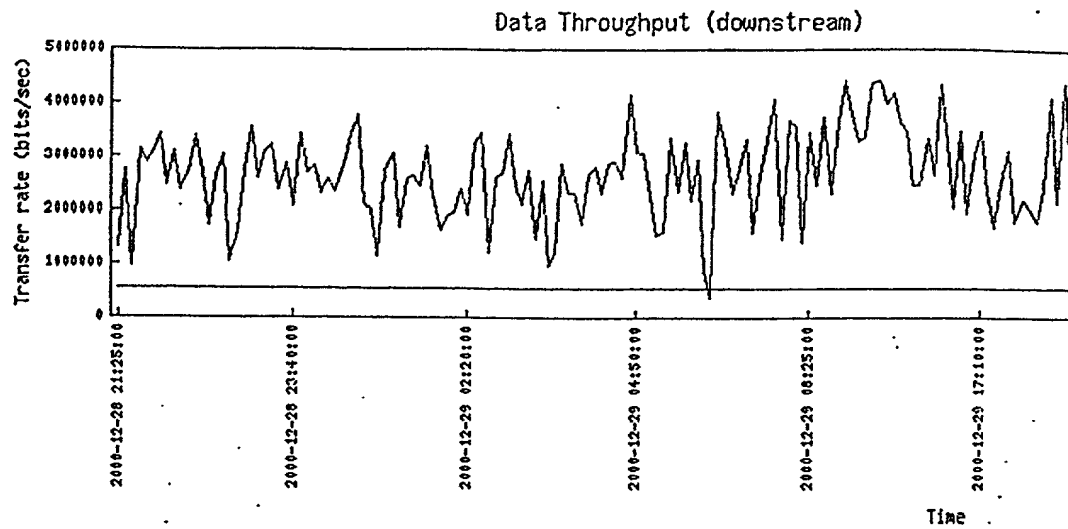


FIG. 45

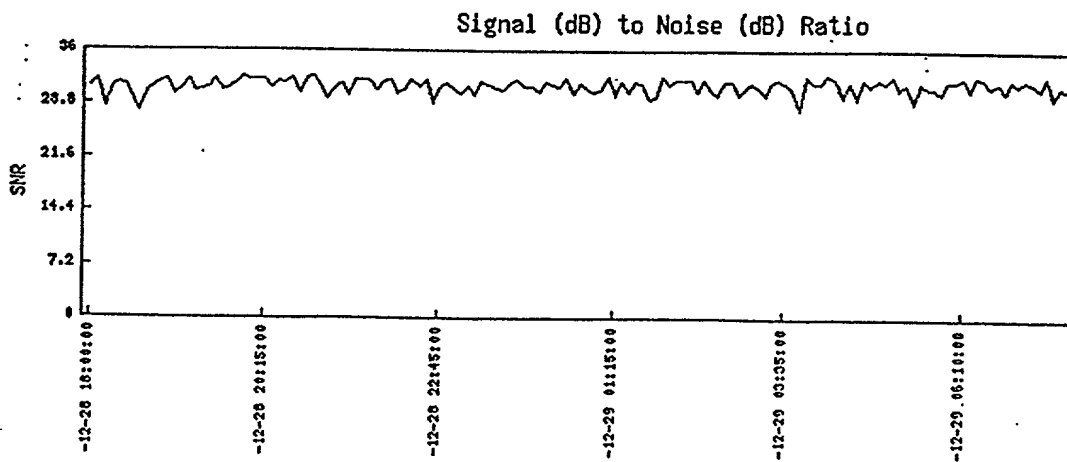
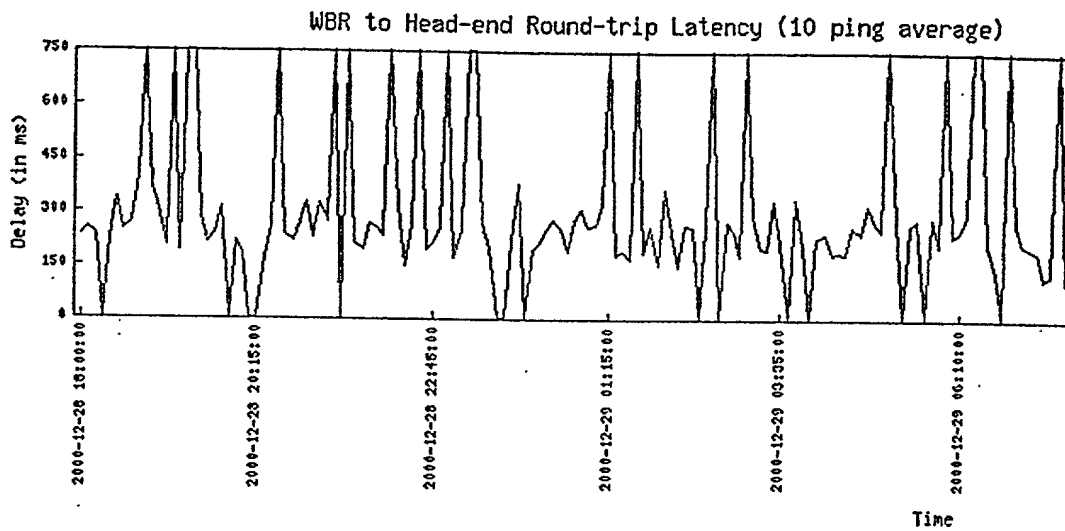
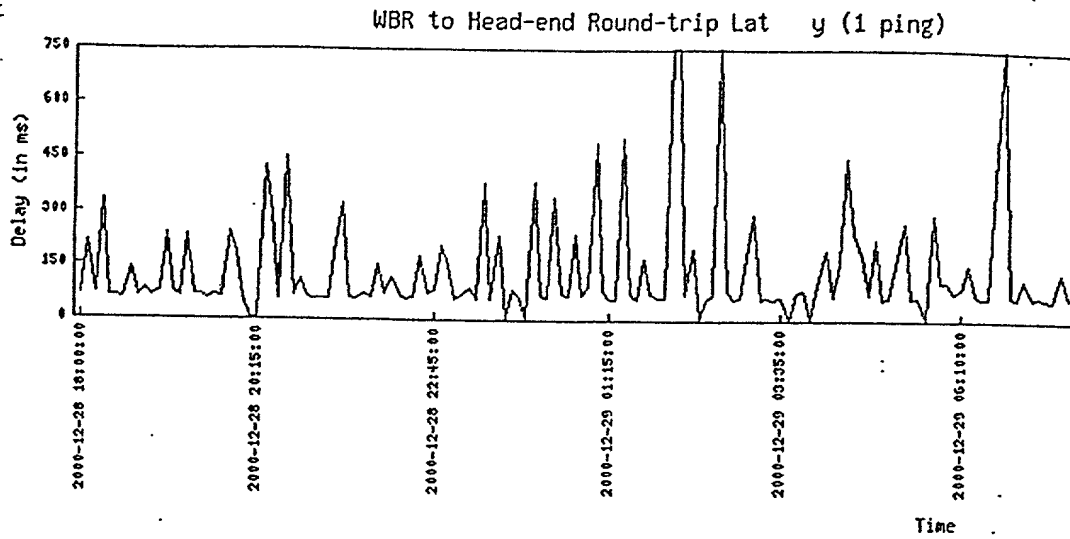


FIG. 46

Peak Time: 2000-12-28 12:25:00 CST

Peak Active Modems	Sampled Modems	Activity Ratio
905	7115	12.72%

Modem Counts		
Contention	Polling	Dedicated
0	847	58

Off Peak Time: 2000-12-28 06:00:00 CST

Off Peak Active Modems	Sampled Modems	Activity Ratio
152	7115	2.14%

Modem Counts		
Contention	Polling	Dedicated
0	98	54

Individual Peak
Modem Counts

Contention 2000-12-28 12:55:00 CST	Polling 2000-12-28 12:25:00 CST	Dedicated 2000-12-28 05:45:00 CST
10	847	88

Avg. Time Spent
Per User

In Contention	In Polling	In Dedicated
0.03 secs	0.71 secs	1.48 secs

FTP Rates At Off Peak
2000-12-28 06:00:00 CST

Downstream	Upstream
3.54 Mbps	85.83 Kbps

FTP Rates At Peak
2000-12-28 12:25:00 CST

Downstream	Upstream
2.21 Mbps	32.02 Kbps

FIG. 47a

Peak FTP Rate Downstream
2000-12-28 07:20:00
6.03 Mbps

Peak FTP Rate Upstream
2000-12-28 07:20:00
217.87 Kbps

2000-12-28 00:00:00 CST thru 2000-12-28 23:59:59 CST

Average FTP Rate Midnight-6pm (off peak)		Average FTP Rate 6pm-Midnight (peak)	
Downstream	Upstream	Downstream	Upstream
2.69 Mbps	51.31 Kbps	2.01 Mbps	38.27 Kbps

2000-12-28 00:00:00 CST thru 2000-12-28 23:59:59 CST

Average HTTP Rate Midnight-6pm (off peak)	Average HTTP Rate 6pm-Midnight (peak)
470.34 Kbps	384.46 Kbps

FEC
Corrections
32.55 : 1000

FEC
Uncorrectables
1.53 %

Available Channels		
230		
Max Functioning Channels	Min Functioning Channels	Avg Functioning Channels
230	68	226.44
Max Non-Functioning Channels	Min Non-Functioning Channels	Avg Non-Functioning Channels
162	0	3.56

Signal to Noise
Ratio
24.93 : 1

Requested to Scheduled
Modem Calibration Ratio
0.65 : 1

Downstream to Upstream
Bitrate Ratio
(All MEASUREMENTS ARE PER USER)

	02:00:00 - 02:15:00 CST	10:00:00 - 10:15:00 CST	14:00:00 - 14:15:00 CST	22:00:00 - 22:15:00 CST
12-28	4.01 : 1	4.46 : 1	10.68 : 1	4.56 : 1

FIG. 47b

2000-12-15 17:33

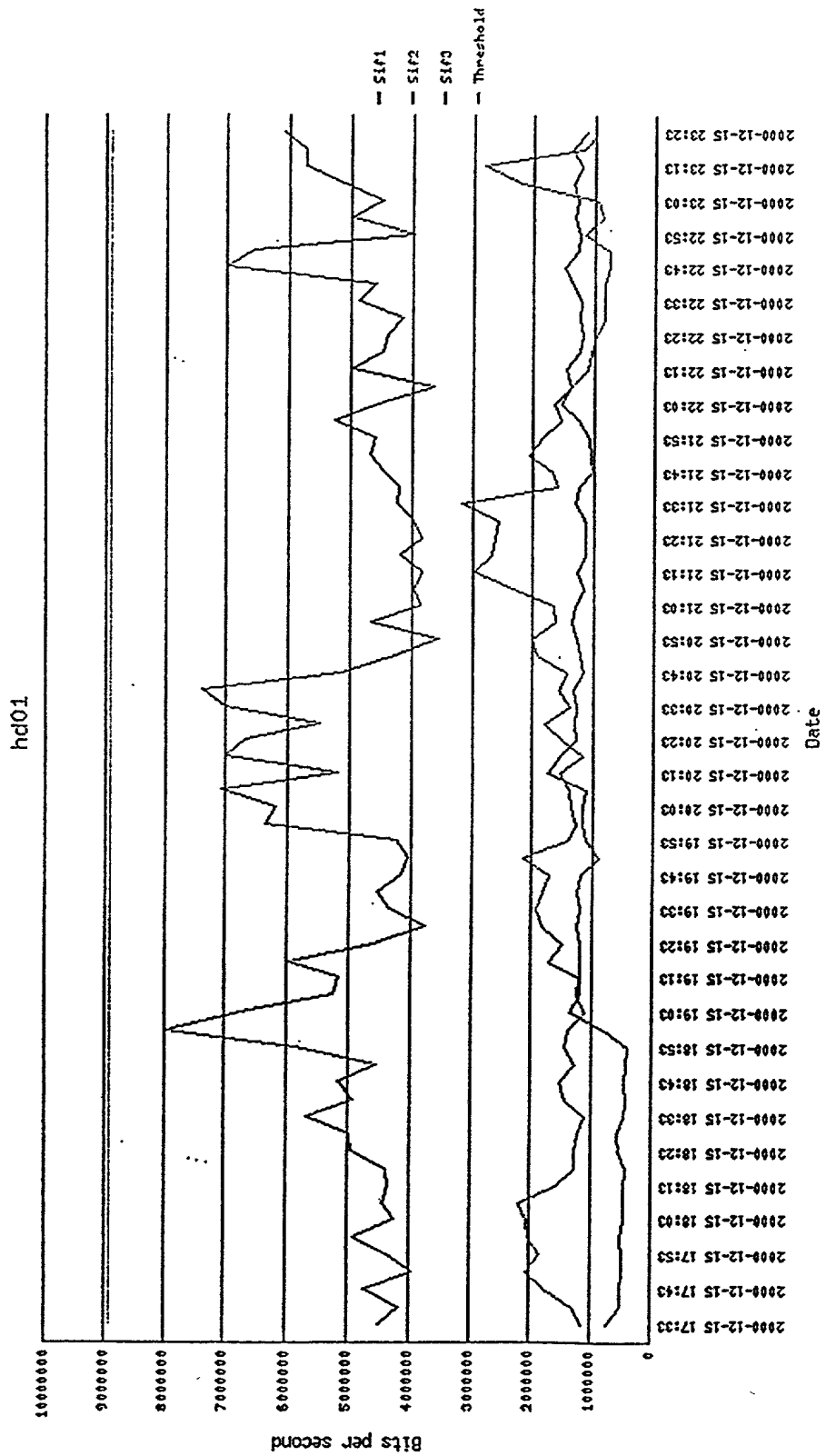


FIG. 48